Division of Plant Disease Control

Bureau of Entomology & Plant Quarantine

BLISTER RUST CONTROL WORK

in the

EASTERN STATES

1935

9

ANNUAL REPORT ON BLISTER RUST CONTROL
SOUTHERN APPALACHIAN STATES
1935

I N D E X

ANNUAL REPORT ON
WHITE PINE BLISTER RUST CONTROL
SOUTHERN APPALACHIAN DISTRICT

1935

By R. G. Pierce

Summer 1936

WHITE PINE BLISTER RUST CONTROL

Annual Report for Calendar Year 1935

for Southern Appalachian States

Introduction - Early Work

Blister rust control work in the south is relatively new. Scouting however for the rust began over 25 years ago. During the years 1909 to 1916, scouting for the blister rust was carried on spasmodically by the Office of the Forest Pathology of the Federal Bureau of Plant Industry. At only one location south of Pennsylvania was the rust ever reported. This location was in Clarke County, Virginia, near White Post. Dr. Perley Spaulding collected a specimen in 1909 or 1910 on a small planted white pine. Most of the trees in the plantation died, and the rust seemed to have died out with the trees.

The Biltmore Estate near Asheville, N. C. which reported several thousand German-grown white pine seedlings, about 1900, were inspected a number of times, but no trace of the rust was ever found there. Frequent inspections for the rust were carried on in Maryland between 1916 and 1920. In Delaware also inspections began in 1916, and continued in 1918 and 1920, no rust however being found. As a result of this early inspection work in Delaware, nearly all of the known plantings of cultivated black currants (Ribes nigrum) were destroyed before 1920 by the owners, the Du Ponts and others. Extensive scouting for pine and Ribes was also carried on under my general super-

vision in Kentucky and Tennessee, by Messrs. McFarland and Alban Stewart. Reports of all this early scouting work aided greatly when extensive work was begun in 1933.

Beginning in 1928 scouting for Ribes and Ribes eradication was begun by the writer on the Shenandoah National Forest (now the George Washington) in Virginia and on the Monogahela Nat'l Forest at the Parsons Nursery in West Virginia. This has been continued annually up to the present time. In 1933 when the CCC Camps were established under the E.C.W Project pine and Ribes surveys and Ribes eradication were carried on on five of the National Forests, and on the two National Parks in the Southern Appalachian States by blister rust checkers (Forestry men with blister rust control experience.) A small amount of eradication work also was conducted on private and state lands from these CCC camps in 1933 and 1934.

The present enlarged control program in the Southern Appalachian States began in May 1934 with new and untrained personnel, and has continued to date. Details of the 1934 work are to be found in the annual reports of the State Leaders and in my statistical tables accompanying them.

Work in 1935

Cooperation

At the beginning of the year, blister rust control was being carried on under cooperative agreement with the States of Maryland, Virginia, West Virginia, North Carolina, Tennessee, Georgia and South Carolina, which began July 1, 1933 and ended June 30, 1935, the funds available on July 6, 1933 being approximately 131,500 dollars, provided by the Federal Government, and the sum of 4,835 dollars, to be provided by the several states in the form of salaries and expenses to cooperators and to their employees while engaged in supervision, office space in other than federally-owned buildings, office equipment, etc.

Beginning with July 1, 1935 the same 7 states cooperated informally with the U. S. Department of Agriculture.

TABLE SHOWING COOPERATIVE FUNDS IN

Southern Appalachian States

Fiscal Year 1934 - 1935

State	Provided by Federal Government	Provided by States and Cooperating Parties (1)	Term
Georgia	$6000 - $7000	$500	Fy 34,35
Maryland	11500 - 12500	1000	FY 34,35
North Carolina	30000 - 31000	500	FY 34,35
South Carolina	5000 - 6000	125	FY 34,35
Tennessee	14000 - 15000	1000	FY 34,35
Virginia	38000 - 40000	1010	FY 34,35
West Virginia	18000 - 20000	700	FY 34,35
	$122,500 to 131,500	4835	

(1) This includes services of cooperators, appraised rental, value of rooms, and equipment furnished by the States as well as monies actually expended by them in blister rust control.

PERSONNEL

The following technical, supervisory and clerical personnel carried on the work during the year.

Georgia				
W. V. Zimmer -	State Leader	Appointed	in May	1934
T. M. Corn	Agent	"	August 22	1935
Elisha J. Weems	"	"	August 26,	1935
Maryland				
H. E. Yost	State Leader	Appointed	Sept.	1933
Daniel W. Norris	Agent	"	July 25	1935
		Term	Oct. 15	1935
Ernest R. Porter	"	Appointed	July 25	1935
		Term	Nov. 30	1935
Wright Thayer	"	Appointed	Aug. 16,	1935
		Term	Oct. 15,	1935
NORTH Carolina				
H. B. Teague	State Leader	Appointed	November	1934
C. H. Hearn	Agent	"	July 29	1935
		Term	Sept. 7	1935
Paul J. Johnson	"	Appointed	August 20,	1935
		Term	Dec. 9	1935
Rowland W. Leiby	"	Appointed	July 29	1935
		Term	Sept 18	1935
H. A. Whitman		Appointed	Aug. 20,	1935
		Furloughed	Dec. 16,	1935
SOUTH Carolina				
J. H. Dean	State Leader	Appointed	May	1934
		Term	April 6	1935
James M. Mann	" "	Appointed	April	1935
		Term	Nov.	1935
Tennessee				
W. E. Duggan	State Leader	Appointed		1934
		Term	Sept. 30,	1935
Troy Jones	" "	Appointed	Sept. 25	1935
			Sept 10	

PERSONNEL Continued

Tennessee

J. R. Porter	Agent	Appointed	Aug. 19, 1935
		Term	Sept. 21, 1935
Pete Stegall	"	Appointed	July 27, 1935

Virginia
Richmond Office

Roy G. Pierce	Pathologist		
L. A. Placek	Auditor	Appointed	August 16, 1935
Ann G. Etheridge	Clerk - Typist	"	Sept. 23, 1935
		Term	Nov. 27, 1935
Mrs. Minnie C. Hudgins - Jr. Clerk		"	Dec. 21, 1935

Charlottesville office

J. G. Luce	State Leader	Appointed	1934
G. C. Cramer	Agent	"	July 29, 1935
W. M. Early	"	"	July 29, 1935
J. M. Swecker	"	"	Aug. 8, 1935
Mrs. Annie S. Dudley, Jr. Clerk Typist		"	Aug. 16, 1935
		Term	Sept. 23, 1935

West Virginia

Dr. J. M. Ashcroft	State Leader	Appointed	May 1934
Ralph W. Welch	Agent	Term June 30, 1935	
		On State payroll July 1	
			Nov. 30.
		Appointed Dec. 2, 1935	
G. C. Hamilton	"	Appointed	Sept. 3, 1935
J. M. Kisella	"	"	Sept. 24, 1936

All of the appointed personnel except the ~~District~~ Regional Leader were laid off on June 30, 1935, because of the absence of any emergency or regular control funds. Most of the personnel were reappointed about July 25, 1935, when funds from the Works Progress Administration (hereinafter termed the W.P.A.) were secured.

SURVEYS

Pine surveys have been carried on in all 7 States, during 1935, in which any control was conducted. Only in South Carolina was the work completed. In South Carolina 13,852 acres of pine were reported in three counties, only 518 acres of which had under 50 trees per acre, and can be considered as having scattered pine. (I have taken 50 white pines as the figure representing approximately 5% of the stand.) The South Carolina report shows these pine areas by counties, and the acreage in each number class (11 classes in all) Such data was compiled from the Pine Area Record sheets which are the basic data sheets from which all our information on white pine is secured.

SUMMARY OF PREERADICATION SURVEYS
In South Carolina for 1934 - 1935

County	White Pine Acreage		
	5% of stand and over	under 5%	Total
Greenville	1,694	488	2,182
Oconee	1,509	12	1,521
Pickens	10,131	18	10,149
Total	13,334	518	13,852

In Georgia while pine surveys were carried on in 1934 and 1935, and U. S. G. S. quadrangles were spotted with the pine areas, no pine data sheets were made for these areas. However, this defect is being made up in 1936, and pine area sheets are being forwarded Richmond office, representing work in various counties.

Data on acreage of white pine in Georgia to the end of 1935 can be ascertained from eradication figures. This data shows that 102,153 acres of white pines (probably includes scattered pine as well as pine over 5% of stand) were protected in 1934 and 1935.

SUMMARY OF PINE SURVEY WORK IN GEORGIA

Year	White Pine Acreage Protected
1934	44,454
1935	57,699
Total	102,153 Acres

In Kentucky surveys were completed in 1934; 26,372 acres of pine being recorded where pine represented 5% or more of the stand, and 35,850 acres of scattered pine.

SUMMARY OF WHITE PINE SURVEYS

IN KENTUCKY IN 1934

County	White Pine Acreage 5% of stand and over	Estimated Area of Scattered Pine	Total
Lee	351	550	901
Magoffin	30	0	30
Menifee	1,314	3,200	4,514
Morgan	409	600	1,009
Powell	2,265	1,500	3,765
Wolfe	22,003	30,000	52,003
Total Acreage	26,372	35,850	62,222

In Maryland pine surveys were practically completed at least for the native pine sections of the state. A total of 76,981 acres of pine were recorded of which over 41,800 acres were 5% of the stand or more.

SUMMARY OF PREERADICATION SURVEYS IN MARYLAND - BY YEARS

Years	White Pine Acreage		
	5% of stand and over	Under 5% (Scattered)	Total Acreage
1933	15,412	19,040	34,452
1934	17,038	1,990	19,028
1935	9,384	14,117	23,501
	41,834	35,147	76,981

PREERADICATION SURVEYS IN MARYLAND IN 1935

County	Program	White Pine Acreage	
		5% and above	Under 5%
Garrett	PWA	970	1,917
"	WPA	200	500
Washington	PWA	7,414	11,500
Frederick	PWA	800	200
Total		9,384	14,117

SURVEYS

In North Carolina in 1935 a preeradication survey was carried on under PWA, in 11 counties. 249,307 acres of white pine were found in this survey. In 1934 approximately 167,108 acres of pine were mapped. The combined total is 416,415 acres.

NORTH CAROLINA SURVEYS OF WHITE PINE ON STATE AND PRIVATE LANDS

County	1934 PWA Funds		1935 PWA Funds	Combined 1934 1935
Ashe and Watauga	60,000	Ashe	7,358	
		Watauga	27,965	
Buncombe	25,000	Buncombe	8,775	
Caldwell	35,000	Caldwell	90,088	
		Avery	3,914	
Graham, Macon and Transylvania	21,840	Madison	13,321	
		Mitchell	13,141	
Mitchell and Yancey	14,418	Yancey	11,249	
Alleghany and Surry Wilkes and Yadkin	10,850	Alexander	4,552	
		Surry	820	
		Wilkes	68,124	
	167,108		249,307	416,415

In Tennessee in 1935 a preeradication survey under both PWA and WPA Projects carried on in 7 counties, a total of 11,592 acres of pine being surveyed. Of this, 9,563 acres represented white pine 5% of the stand and better, and 2,029 acres represent scattered pine under 5% of the stand. At the end of 1935, the following counties had been scouted for pines and the pine mapped on U.S.G.S. sheets in Tennessee.

Bledsoe*	Cumberland*	Monroe Morgan*	Scott
Blount	Fentress*	Pickett	Sevier
Carter*	Hamilton	Polk	Sullivan
Cocke	Johnson*	Rhea*	

Note* Counties covered in 1933. Other Counties were covered in 1934.

Surveys have not been completed in Campbell, Greene, Johnson, Pickett, Sullivan, Unicoi and Washington Counties. Some of these will be covered in 1936. On account of the higher standards of surveys in 1934 when practically no white pines (except in Sullivan County) under 10 acres in area or under 5% of the stand, were recorded, there remains a large acreage of pine to be surveyed in the state, particularly if the original estimate of white pine in the state is reasonably accurate.

TENNESSEE

SURVEYS ON STATE AND PRIVATE LAND

The total acreage of White Pine Surveyed on State and Private land is shown in the following table.

County	1934		1935	WPA PWA	
	Under WPA (Acres)	ECW	5% and over (Acres)	Under 5% (Scattered)	Total (Acres)
Bledsoe	546		168		714
Blount	144				144
Carter			2806.5	1,536	4342.5
Cocke	517				517
Cumberland	2,095		1808		3903
Fentress	1,670		880	117	2667
Hamilton	227				227
Johnson	4,711	228	235	356	5530
Monroe	973				973
Morgan	6,123		3082.5		9205.5
Pickett	125				125
Polk	77				77
Rhea	967		583	20	1570
Scott	2,902				2902
Sevier	125 (Scattered)				125
	21,202	228	9563	2,029	33,022

Total in 1934 21,430 Acres

Total in 1935 11,592

Grand Total 33,022

In Virginia a preeradication survey on state and private lands was continued in 1935, 58,816 acres of pine being surveyed under P. W. A. and 8,377 acres of pine being surveyed under W. P. A. and 67,193 acres of pine being the total. Including the protective zones, only 50,223 acres will have to be worked for Ribes, the remainder being found free of Ribes. No list of counties is given showing pine acreage. This list should be found in the 1936 report.

SUMMARY OF PINE SURVEYS ON

STATE AND PRIVATE LANDS IN VIRGINIA

Year	Acreage of White Pine Surveyed			
	E.C.W	P.W.A.	W.P.A.	Total
1934	3,502			3,502
1935		58,816	8,377	67,193
	3,502	58,816	8,377	70,695

In West Virginia Preeradication surveys of white pine were carried on during the winter months, at which time pine can be located more easily than during the growing season. The results in 1935, showed that 12,772 acres of pine had been mapped, of which 11,981 acres were of pine 5% of the stand, and over, and only 791 acres were scattered pine.

SUMMARY OF PREERADICATION SURVEY IN WEST VIRGINIA IN 1935

County	White Pine Acreage						Combined PWA and WPA		
	PWA 5% and over	Under 5%	Total	WPA 5% and over	Under 5%	Total	5% and over	Under 5%	Total
Greenbrier	950	726	1,676				950	726	1,676
Pendleton	2,141	0	2,141	514	0	514	2,655	0	2,655
Pocahontas	2,352	65	2,417	6,024	0	6,024	8,376	65	8,441
	5,443	791	6,234	6,538	0	6,538	11,981	791	12,772

SUMMARY OF PREERADICATION SURVEY In 1934 Under P.W.A.

SUMMARY OF PREERADICATION SURVEY 1934 - 1935

County	White Pine Acreage					Combined PWA and WPA		
	5% and above	5% and over	White Under 5% and under	PWA Proj. Total	Acreage W.P.A. 5% and over	5% and over	Under 5%	Total
Greenbrier	1,265	2,215	726	2,941		2,215	726	2,941
Pendleton	841	2,982	0	2,982	514	3,496		3,496
Pocahontas	1,926	4,278	65	4,343	6,024	10,302	65	10,367
Total	4,032	9,475	791	10,266	6,538	16,013	791	16,804

STATUS OF THE BLISTER RUST - MARYLAND

While the blister rust has been known in Maryland since 1931, its origin in the state dates back probably to 1924. The oldest infection on pine is in Garrett County in the extreme western end of the State at Bittinger.

By the close of 1935, blister rust had been found in five counties; Allegany, Frederick, Garrett, Montgomery and Washington. Infections have been heaviest in Garrett County where 14 centers on pine have been found, and where 94 centers on Ribes have been located. In 1935 blister rust could be found almost anywhere in Garrett County.

In Allegany County the earliest infection on pine dated back to 1927 at Deep Run. 3 other pine centers are known in the county. Ribes infection were found at numerous locations in 1935.

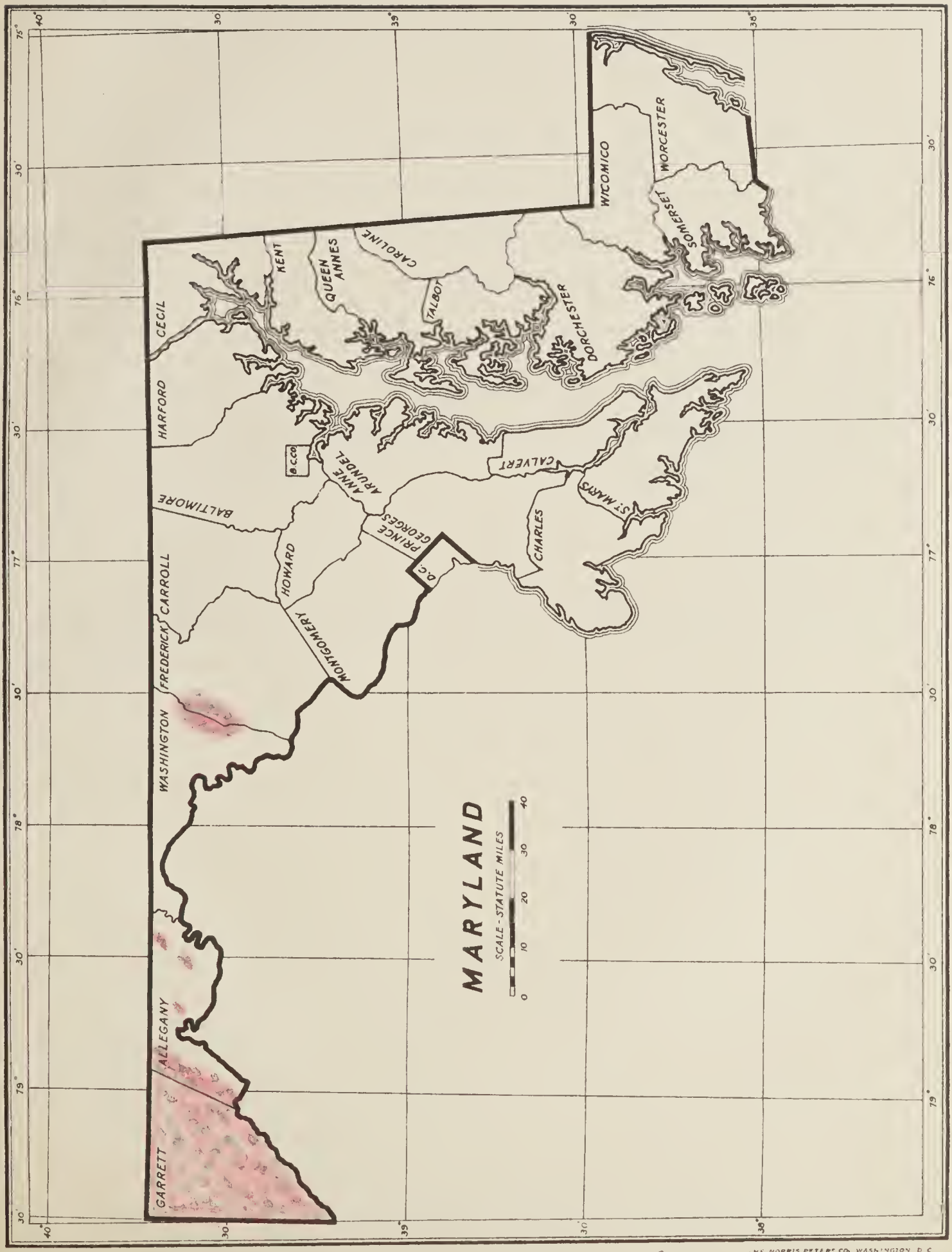
In Washington County the rust has been found in the past from 1931 to 1934 on pine at one location, and on Ribes at five locations.

In Frederick County the first infection was found near Wolfsville in 1935, the pine cankers dating back to 1932. About 1/3 of all Ribes on 1100 acres worked in 1935 were infected with blister rust.

In Montgomery County the European black currants at Hurlebau's place at Aspin Hill near Norbeck were infected heavily for the second year. This infection on approximately 200 Ribes nigrum is just over one mile from a pine growing nursery. Professor C. H. Temple, Plant Pathologist at

University of Maryland is trying to secure the destruction of these bushes.

A map of Maryland showing location of blister rust on pine and Ribes follows:



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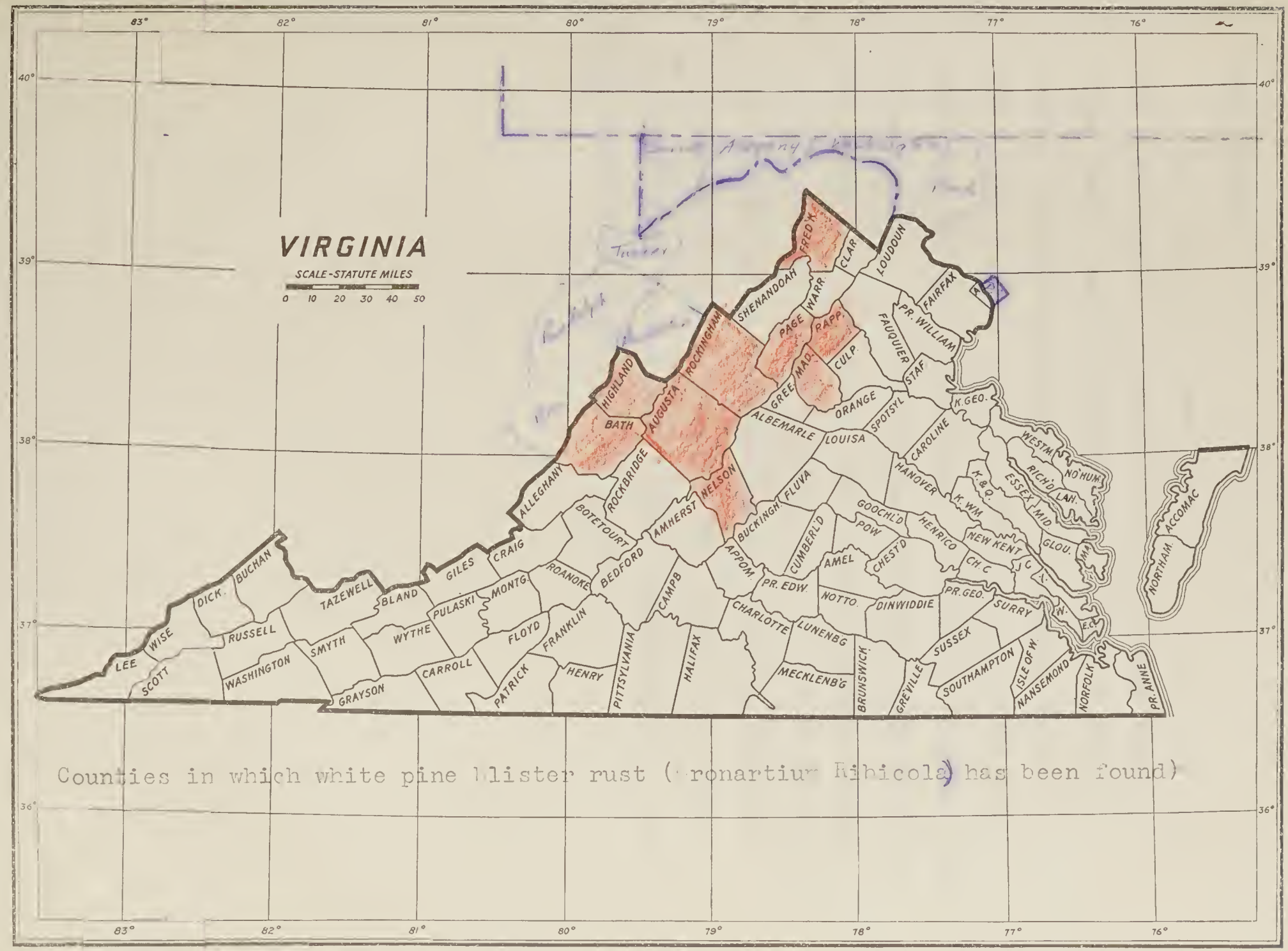
VIRGINIA

The rust was first discovered in 1931 on Ribes in Frederick and Rappahonnack Counties. Since that time it has been found in seven additional counties making nine in all. These are Augusta, Bath, Frederick, Highland, Madison, Nelson, Page, Rappahonnack and Rockingham. All of these counties are north of the center of the state except Nelson.

The most extensive centers of infection on pine are in the Shenandoah National Park along Sky Line Drive and in the George Washington National Forest. The infections in the park date back to about 1926 while the infections in the National Forest date back to about 1922.

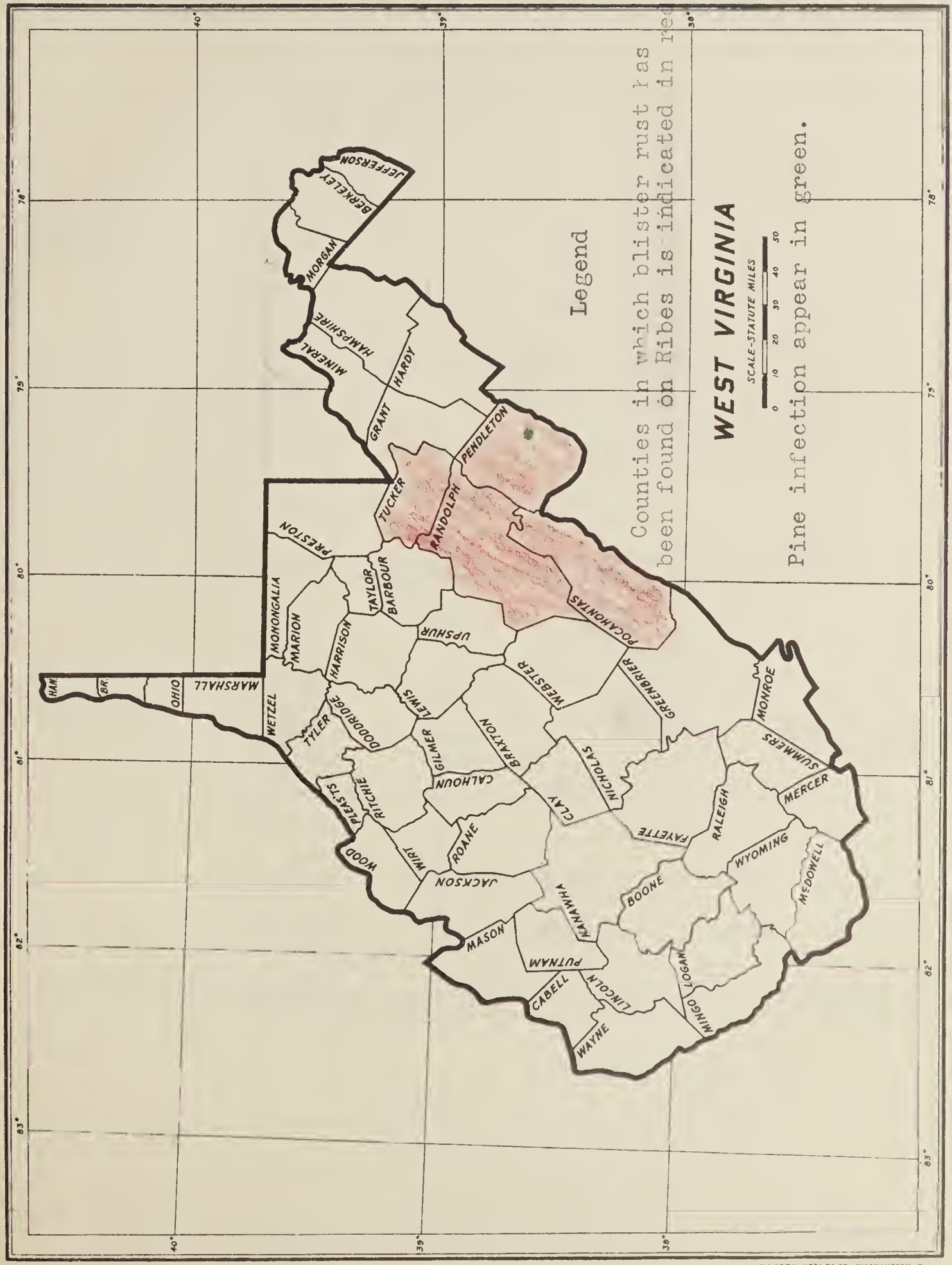
In 1935 the blister rust was found to be widespread and abundant in Augusta, Highland, Page and Rappahonnack Counties, on Ribes.



Counties in which white pine blister rust (Cronartium Ribicola) has been found)

WEST VIRGINIA

The blister rust was first found in the State in 1931 near Alpena in Randolph County, and near Thomas in Tucker County, as spot infections. In 1933 a single infection was found near Dunmore in Pocahontas County. In 1934 infections were found in and adjacent to the George Washington National Forest near Fort Seybert on both Ribes and white pine. In 1935 weather conditions were as favorable for the spread of the rust in West Virginia, as in Maryland and Virginia. Not only was the rust found generally distributed on Ribes throughout northern Pocahontas and eastern Pendleton Counties, but it was also found in Tucker County, just outside of the quarantine area around the Forest Service nursery at Parsons.



THE NORRIS PETERS CO., WASHINGTON, D. C.

CONTROL WORK

In 1935, blister rust was carried on in 7 of the Southern Appalachian States, viz; Georgia, Maryland, North Carolina, South Carolina, Tennessee, Virginia and West Va. A brief statement concerning the work in each states is here given.

GEORGIA

Control work began in Georgia in 1933 with some scouting carried on by two blister rust checkers on the Cherokee and Nantahala National Forests, now the Chattahoochee National Forest. The following tables show in brief the results of Control work in the State since it began.

Table 1 - Showing Eradication of Wild Ribes in Georgia by Programs in 1935

Program	Acreage Worked In 1935	No. of Ribes Destroyed		No. of Man-Days Labor		Percent of Total Acreage Worked
Regular	0	0		0		0
W. P. A.	124,122	802,053	[illegible]	2,961	.024	71.71
P. W. A.	48,975	4,151	.085	276	.006	29.29
E. C. W.	0	0		0		0
	173,097	806,204		3,237		100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN GEORGIA BY FIRST AND SECOND WORKINGS - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	173,097	806,204	3,169	4.6
Second	0	0	68*	0
Totals	173,097	806,204	3,237	4.6

* Includes 2nd working on cultivated Ribes.

TABLE 3 SHOWING RIBES ERADICATION IN GEORGIA ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Project	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor
			Wild	Culti.	Total	
Nat'l Forest Both Projects	WPA PWA	105,245	714,503	1,281	715,784	2,027
State Land		25	11,377	0	11,377	31
Private Land		67,827	80,324	15,796	96,120	1,179
Totals		173,097	806,204	17,077	823,281	3,237

TABLE 4 SUMMARY OF RIBES ERADICATION IN GEORGIA BY YEARS 1933 - *1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1933	8,851	0	40	0	0.004
1934	133,362	12,744	468	0.09	0.003
1935	173,097	823,281	3,237	4.75	0.02
Total	315,310	836,025	3,745	2.65	.0119

* Including both wild and cultivated bushes.

TABLE 5 SUMMARY OF ERADICATION RESULTS IN GEORGIA

1933 - 1935 BY PROGRAMS

Programs	Acreage Worked 1933 - 1935	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	124,122	810,772 6.5	2,961 .024	39.36
P. W. A.	175,695	25,018 .1	733 .0041	55.72
E. C. W.	15,493	235 .015	51 .0033	4.92
Totals	315,310	836,025	3,745	100.00

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN GEORGIA BY FIRST AND SECOND WORKING 1933 - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	315,310	835,366	3,677	2.65
Second	0	659	68	0
Total	315,310	836,025	3,745	2.65

TABLE 7 SHOWING RIBES ERADICATION IN GEORGIA ACCORDING TO OWNERSHIP OF LANDS IN 1933 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor
National Forests	119,999	716,019	2,038
State Lands	125	11,377	31
Private Lands	195,186	108,629	1,676
Total	315,310	836,025	3,745

TABLE 8 SHOWING RIBES ERADICATION IN GEORGIA IN NATIONAL FORESTS BY YEARS

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	8,112	0	not available	$147.90
1934	6,642	235	11	119,01
1935	105,245	715,784	2,027	7,253.63
Total	119,999	716,019	2,038	$7,520.54

TABLE 9 COST DATA FOR RIBES ERADICATION IN GEORGIA, BY PROJECTS IN 1935*

Program	Initial Work	Rework	Total
WPA	$7603.78	0	$7603.78
PWA	2701.50	0	2701.50
ECW	0.00	0	0.00
Total	$10305.28	0	$10305.28

*This includes in Georgia, State Leader, as well as Agents and Laborers.

TABLE 10 COST PER ACRE, FOR RIBES ERADICATION IN GEORGIA, BY PROJECTS IN 1935

Program	Initial	Rework	Total
WPA	$0.061	$ 0	$0.061
PWA	0.055	0	0.055
ECW	0	0	0
Average all Programs	$0.059	$ 0	$0.059

TABLE 11. COST DATA FOR RIBES ERADICATION IN GEORGIA BY YEARS, 1933 to 1935

Program	1933	1934	1935	Total all Years
W. P. A.	$0	$ 0.	$ 7603.78	$7603.78
P. W. A.	0	3788.36	2701.50	6489.86
E. C. W.	162.65	119.01	0.00	281.66
Totals	$162.65	$3,907.37	$10,305.28	$14,375.30

TABLE 12. COST PER ACRE FOR RIBES ERADICATION IN GEORGIA BY PROJECTS 1933 to 1935

Programs	1933	1934	1935	All Years
W. P. A.	$ 0	$ 0	$ .061	$ 0.061
P. W. A.	0	0.029	.055	0.036
E. C. W.	0.184	0.018	0.	0.018
Average All Programs	$ 0.184	$0.029	$0.059	$0.045

TABLE 13 COST DATA FOR RIBES ERADICATION IN GEORGIA BY FIRST AND SECOND WORKING 1933 to 1935

Program	Initial Work	Rework	Total
W. P. A.	$7,603.78*	$ 0	$7,603.78
P. W. A.	6,489.86	0	6,489.86
E. C. W.	281.66	0	281.66
Total	$14,375.30	$ 0	$14,375.30

* This includes cost of reworking sites for cultivated Ribes which took 68 man-days - cost approximately $1.50 per day or $102.00

TABLE 14 SHOWING ERADICATION OF WILD AND CULTIVATED RIBES IN GEORGIA BY YEARS 1933 TO 1935

Year	Wild Bushes	Cultivated Bushes	Total Bushes
1933		0	0
1934		12,744	12,744
1935	806,204	17,077	823,281
Total All Years	806,204	29,821	836,025

MARYLAND

Control work in Maryland began in 1932 when R. G. Pierce carried on work alone in Baltimore County on the Loch Raven Watershed, of the City of Baltimore and on State lands in the Western counties. In September 1933 Mr. H. E. Yost was appointed as State Leader. Ribes eradication work was begun by him immediately and has been carried on by him continuously to date, with the assistance of several agents working part time.

The results of the work in Maryland in 1935 and in preceding years are shown in the following eleven tables.

TABLE 1. SHOWING ERADICATION OF WILD RIBES IN MARYLAND BY PROGRAMS IN 1935

Program	Acreage Worked in 1935	No. of Ribes Destroyed	No. of Man-Days Labor*	Percent of Total Acreage worked
Regular	0	0	0	0
W. P. A.	18,487	308,689	1,770	43,13
P. W. A.	18,642	114,361	1,067	43.49
E. C. W.	5,733	274,503	863	13.38
Totals	42,862	697,553	3,700	100.00

*Includes Labor and Supervision

TABLE 2. SHOWING ERADICATION OF WILD RIBES IN MARYLAND BY FIRST AND SECOND WORKINGS IN 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	24,259	511,835	2,112	21.1
Second	18,603	185,718	1,588	9.98
Totals	42,862	697,553	3,700	16.27

TABLE 3 SHOWING RIBES ERADICATION IN MARYLAND ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor
		Wild	Culti.	Total	
National Forest	0	0	0	0	0
State Land	4,000	151,202	0	151,202	973
Private Land	38,862	546,351	1,904	548,255	2,727
Totals	42,862	697,553	1,904	699,457	3,700

TABLE 4. SUMMARY OF RIBES ERADICATION IN MARYLAND BY YEARS 1932 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1932	800	1	Data not available	.001	-
1933	1,890	187,470	316	99.14	0.17
1934	107,164	966,137	2,498	9.01	0.02
1935	42,862	699,457	3,700	16.31	0.09
Totals	152,716	1,853,065	6,514	12.13	0.04

TABLE 5 SUMMARY OF ERADICATION RESULTS IN MARYLAND 1932 - 1935 By Programs

Program	Acreage Worked 1932 -1935	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	800	1	No data	0.52
W. P. A.	18,487	309,119	1,770	12.11
P. W. A.	127,436	1,193,379	3,589	83.45
E. C. W.	5,993	350,566	1,155	3.92
Total	152,716	1,853,065	6,514	100.00

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN MARYLAND BY FIRST AND SECOND WORKING 1932 - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	133,644	1,628,053	4,870	12.18
Second	19,072	225,012	1,644	11.80
Total	152,716	1,853,065	6,514	12.13

TABLE 7 SHOWING RIBES ERADICATION IN MARYLAND ACCORDING TO OWNERSHIP OF LANDS 1932 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre
National Forests	0	0	0	0
State Lands	25,430	700,000	1,897	
Private Lands	127,286	1,153,065	4,617	
Totals	152,716	1,853,065	6,514	

TABLE 8 COST DATA FOR RIBES ERADICATION IN MARYLAND, BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$5,196.36	$ 0	$5,196.36
P. W. A.	137.71	3,909.18	4,046.89
E. C. W.	288.00	575.00	863.00
Total	$5,622.07	$4,484.18	$10,106.25

TABLE 9 COST PER ACRE FOR RIBES ERADICATION IN MARYLAND BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$ 0.281	$ 0	$ 0.281
P. W. A.	$ 0.026	$ 0,294	$ 0.217
E. C. W.	$ 0.70	$ 0.108	$ 0.15
Average All Programs	$ 0.24	$ 0.232	$ 0.241

TABLE 10 COST DATA FOR RIBES ERADICATION IN MARYLAND BY YEARS 1932 to 1935

Program	1932	1933	1934	1935	Total all Yrs.
Regular	$26.35	$ 0	$ 0	$ 0	$ 26.35
W. P. A.	$ 0	$ 0	$ 0	$5,196.36	$ 5,196.36
P. W. A.	$ 0	$1,684.95	$8,131.78	$4,046.89	$13,863.62
E.C . W.	$ 0	$ 0. 0	$ 292.00	$ 863.00	$ 1,155.00
Total	$26.35	$1,684.95	$8,423.78	$10,106.25	$20,241.33

TABLE 11 COST PER ACRE FOR RIBES ERADICATION IN MARYLAND BY PROJECTS 1932 to 1935

Program	1932	1933	1934	1935	Total all Years
Regular	$0.033	$0	$0	$0	$0.033
W. P. A.	$0	$0	$0	$0.281	$0.281
P. W. A.	$0	$0.89	$0.076	$0.217	$0.109
E. C. W.	$0	$0	$1.12	$0.15	$0.193
Average all Programs	$0.033	$0.89	$0.077	$0.241	$0.133

TABLE 12 COST DATA FOR RIBES ERADICATION IN MARYLAND BY WORKING AND YEAR 1932 to 1935

PROGRAM INITIAL WORK	1932	1933	1934	1935	Total
Regular	$26.35	$ 0	$ 0	$ 0	$ 26.36
W. P. A.	0	0	0	5,196.36	5,196.36
P.W. A.	0	1,684.95	7,927.05	137.71	9,749.71
E. C. W.	0	0 0	292.00	288.00	580.00
Total Initial Work	$26.35	$1,684.95	$8,219.05	$5,622.07	15,552.42
REWORK					
Regular	$ 0	$0 0	$ 0	$ 0 0	$ 0 0
W. P. A.	0	0 0	0 0	0 0	0 0
P. W. A.	0	0 0	0 204.73	3,909.18	4,113.91
E. C. W.	0	0 0	0 0	575.00	575.00
Total Rework	$ 0	$ 0	$ 204.73	$4,484.18	$4,688.91
Grand Total All Work	$26.35	$1,684.95	$8,423.78	10,106.25	$20,241.33

TABLE 13 COST DATA FOR RIBES ERADICATION IN MARYLAND BY INITIAL WORK AND REWORK 1932 to 1935

Program	Initial Work	Rework	Total
Regular	$ 26.35	$ 0	$26.35
W. P. A.	$5,196.36	0	5,196.36
P. W. A.	9,749.71	4,113.91	13,863.62
E. C. W.	580.00	575.00	1,155.00
Total	$15,552.42	$4,688.91	$20,241.33

TABLE 14 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES ERADICATION IN MARYLAND, BY PROGRAMS

Programs	1935		1932 To 1935	
	Wild Ribes Per Acre	Man-Days Per Acre	All Ribes Per Acre	Man-Days Per Acre
Regular	0	0	.001	-
W. P. A.	16.69	.096*	16.7	.096*
P. W. A.	6.13	.057	9.4	.028
E. C. W.	47.88	.151	58.5	.192
Average	16.27	.086	12.1	.043

*This data is based on same number of man-days, since it is not possible to separate man-days for eradication of wild Ribes from man-days for eradication of cultivated Ribes.

TABLE 15 SHOWING ERADICATION OF WILD AND CULTIVATED RIBES IN MARYLAND, BY YEARS 1932 TO 1935

Year	Wild Bushes	Cultivated Bushes	Total
1932	0	1	1
1933	187,444	26	187,470
1934	965,075	1,062	966,137
1935	697,553	1,904	699,457
Total All Years	1,850,072	2,993	1,853,065

RIBES ERADICATION IN NORTH CAROLINA

Ribes eradication in North Carolina began in 1933 with scouting and eradication being carried out by checkers from two National Forests and the National Park. While these men covered 29,570 acres, they only found and destroyed 360 Ribes. In 1934, over 100,000 Ribes were found, but 85% were cultivated bushes. It was not until 1935 that wild Ribes were found in quantity. In that year over 145 thousand wild Ribes were destroyed and 113 thousand cultivated, making a total of over 261 thousand bushes. The total number of bushes pulled December 31, 1935 amounted to 361,744.

In the following tables, the results of local control through Ribes eradication are shown for 1935, and for all years, under various headings.

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN NORTH CAROLINA BY PROGRAMS IN 1935

Programs	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	241,189	138,936	6,743	40.99
P. W. A.	347,171	9,018	1,288	59.01
E. C. W.	0	0	0	0
Totals	588,360	147,954	8,031	100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN NORTH CAROLINA BY FIRST AND SECOND WORKINGS IN 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	572,960	147,954	7,884	0.26
Second	15,400	0	147	0
Total	588,360	147,954	8,031	0.26

TABLE 3 SHOWING RIBES ERADICATION IN NORTH CAROLINA ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Project	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor
			wild	Culti.	Total	
National Forest	WPA	0	0	0	0	0
	PWA					
Both Projects						
State Land		588,360	147,954	113,108	261,062	8031
Private Land						
Totals		588,360	147,954	113,108	261,062	8031

TABLE 4 SUMMARY OF RIBES ERADICATION IN NORTH CAROLINA BY YEARS 1933 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1933	29,570	360	415	0.01	0.01
1934	582,610	100,322	2,818	0.17	0.005
1935	588,360	261,062	8,031	0.44	0.01
Total	1,200,540	361,744	11,264	0.30	0.009

TABLE 5 SUMMARY OF ERADICATION RESULTS IN NORTH CAROLINA BY PROGRAMS 1933 - 1935

Program	Acreage Worked 1933-1936	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	241,189	210,239	6,743	20.09
P. W. A.	905,183	150,876	3,951	75.40
E. C. W.	54,168	629	570	4.51
Total	1,200,540	361,744	11,264	100.00

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN NORTH CAROLINA BY FIRST AND SECOND WORKING 1933 - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	1,185,140	357,625	11,117	0.30
Second	15,400	4,119	147	0.27
Total	1,200,540	361,744	11,264	0.30

TABLE 7 SHOWING RIBES ERADICATION IN NORTH CAROLINA ACCORDING TO OWNERSHIP OF LANDS 1933 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Costs
National Forests	52,158	496	558	$2,413.85
National Parks	2,010	133	12	200.83
Total Nat'l Lands	54,168	629	570	2,614.68
State Lands / Private Lands	1,146,372	361,115	10,694	37,705.07
Totals	1,200,540	361,744	11,264	$40,319.75

TABLE 8 SHOWING RIBES ERADICATION IN NORTH CAROLINA IN NATIONAL FORESTS BY YEARS 1933 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	27,560	227	403	$1,627.65
1934	24,598	269	155	786.20
1935	0	0	0	0
Total	52,158	496	558	$2,413.85

TABLE 9 SHOWING ERADICATION OF WILD AND CULTIVATED RIBES IN NORTH CAROLINA BY YEARS 1933 - 1935

Year	Wild Bushes	Cultivated Bushes	Total of all Ribes
1933	360	0	360
1934	14,823	85,499	100,322
1935	147,954	113,108	261,062
Total	163,137	198,607	361,744

TABLE 10 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$14,779.59	$ 0	$14,779.59
P. W. A.	7,557.68	830.56	8,388.24
E. C. W.	0	0	0
Total	$22,337.27	$830.56	$23,167.83

TABLE 11 COST PER ACRE FOR RIBES ERADICATION IN NORTH CAROLINA BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$ 0.06	$ 0	$ 0.06
P. W. A.	0.022	0.054	0.025
E. C. W.	0	0	0
Average Cost for all Programs	$ 0.039	$ 0.054	$ 0.039

TABLE 12 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA BY YEARS 1933 to 1935

Program	1933	1934	1935	Total all Years
W. P. A.	$ 0	$ 0	$14,779.59	$14,779.59
P. W. A.	$ 0	$14,537.24	$ 8,388.24	$22,925.48
E. C. W.	$1,828.48	786.20	$ 0	$ 2,614.68
Total	$1,828.48	15,323.44	$23,167.83	$40,319.75

TABLE 13 COST PER ACRE FOR RIBES ERADICATION IN NORTH CAROLINA BY PROJECTS 1933 - 1935

Program	1933	1934	1935	All Years
W. P. A.	$ 0	$ 0	$ 0.06	$ 0.06
P. W. A.	0	0.026	0.025	0.025
E. C. W.	$0.061	$ 0.032	$ 0	$ 0.048
Average Cost for all Programs	$0.061	$ 0.026	$ 0.039	$ 0.033

TABLE 14 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA BY WORKING AND YEAR 1933 to 1935

Program	1933	1934	1935	Total
INITIAL WORK				
W. P. A.	$ 0	$ 0	$14,779.59	$14,779.59
P. W. A.	$ 0	$14,537.24	$ 7,557.68	$22,094.92
E. C. W.	$1,828.48	$ 786.20	$ 0	$ 2,614.68
Total Initial Work	$1,828.48	$15,323.44	$22,337.27	$39,489.19
REWORK				
W. P. A.	$ 0	$ 0	$ 0	$ 0
P. W. A.	$ 0	$ 0	$ 830.56	$ 830.56
E. C. W.	$ 0	$ 0	$ 0	$ 0
Total Rework	$ 0	$ 0	$ 830.56	$ 830.56
Grand Total All Work	$1,828.48	$15,323.44	$23,167.83	$40,319.75

TABLE 15 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA BY WORKING AND PROGRAMS 1933 to 1935

Program	Initial Work	Rework	Total
W. P. A.	$14,779.59	$ 0	$14,779.59
P. W. A.	22,094.92	830.56	22,925.48
E. C. W.	2,614.68	0	2,614.68
Total	$39,489.19	$830.56	$40,319.75

TABLE 16 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES ERADICATION IN NORTH CAROLINA BY PROGRAMS

Programs	1935		1933 to 1935	
	Wild Ribes Per Acre	Man-Days Per Acre	All Ribes Per Acre	Man-Days Per Acre
Regular	0	0	00	0
W. P. A.	0.57	.028*	0.87	.028*
P. W. A.	0.03	.004	0.16	.004
E. C. W.	0	0	0.011	.010
Average Per Acre	0.25	.013	0.30	.009

* This data is based on the same number of Man-Days. Since it is not possible to separate Man-Days for eradication of wild Ribes from Man-Days for eradication of cultivated Ribes.

Ribes eradication has been carried on in Tennessee since the summer of 1933, through three different agencies, E. C. W, P. W. A. and W. P. A, in the order named. The P. W. A. is responsible for the largest acreage, viz; 122,340, out of 160,955 acres worked. W. P. A. however is responsible for the largest number of Ribes destroyed 194,922 out of a total of 452,644.

In 1935, 321,636 Ribes were destroyed on 58,647 acres at an expenditure of 1649.6 man-days labor. The following tables show the work in 1935 and preceding years, under various headings.

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN TENNESSEE BY PROGRAMS IN 1935

Program	Acreage Worked in 1935	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	15,439	192,845	1,108	31.74
P. W. A.	32,802	117,160	505.8	67.43
E. C. W.	406	11,631	35.8	.83
Total	48,647	321,636	1,649.6	100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN TENNESSEE BY FIRST AND SECOND WORKINGS IN 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	47,768	264,408	1,575.8	5.53
Second	879	57,228	73.8	65.10
Total	48,647	321,636	1,649.6	6.61

TABLE 3 SHOWING RIBES ERADICATION IN TENNESSEE ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Acreage Worked	No. of Ribes Removed			No. of Man-Days Labor
		Wild	Culti.	Total	
Nat'l Forest	0	0	0	0	0
State Land) Private Land)	48,647	321,636	2,840	324,476	1649.6
Total	48,647	321,636	2,840	324,476	1649.6

TABLE 4 SUMMARY OF RIBES ERADICATION IN TENNESSEE BY YEARS 1933 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1933	10,720	62,872	382	5.86	0.035
1934	101,588	65,296	1,230	0.64	0.012
1935	48,647	324,476	1,649.6	6.67	0.034
Total	160,955	452,644	3,261.6	2.81	0.020

TABLE 5 SUMMARY OF ERADICATION RESULTS IN TENNESSEE 1933 - 1935 BY PROGRAMS

Program	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	15,439	194,922 12.	1,108 .07	9.59
P. W. A.	122,340	168,609 1.3	1,438.8 .011	76.01
E. C. W.	23,176	89,113 3.8	714.8 .031	14.40
Total	160,955	452,644	3,261.6	100.00

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN TENNESSEE BY FIRST AND SECOND WORKING 1933 - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	160,076	395,416	3,188	2.47
Second	879	57,228	74	65.10
Total	160,955	452,644	3,262	67.57

TABLE 7 SHOWING RIBES ERADICATION IN TENNESSEE IN NATIONAL FORESTS BY YEARS 1933 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	8,895	62,856	No data	848.68
1934	11,970	185	216	633.44
1935	0	0	0	0
Totals	20,865	63,041	216	1,482.12

TABLE 8 SHOWING RIBES ERADICATION IN TENNESSEE ACCORDING TO OWNERSHIP OF LANDS 1933 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
Nat'l Forest	20,865	63,041	216	$1,482.12
Nat'l Parks	1,825	16	No data	200.15
Total	22,690	63,057	216	1,682.27
State Lands, Private Lands	138,265	389,587	3,046	10,912.15
Total	160,955	452,644	3,262	$12,494.42

TABLE 9 SHOWING ERADICATED WILD AND CULTIVATED RIBES IN TENNESSEE BY YEARS, 1933 to 1935

Year	Wild Bushes	Cultivated Bushes	Total all Years
1933	62,832	40	62,872
1934	64,041	1,255	65,296
1935	321,636	2,840	324,476
Total	448,509	4,135	452,644

TABLE 10 COST DATA FOR RIBES ERADICATION IN TENNESSEE BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$2001.29	$ 0	$2001.29
P. W. A.	2086.10	313.13	2399.23
E. C. W.	73.25	0	73.25
Total	$4160.64	$313.13	$4473.77

TABLE 11 COST PER ACRE FOR RIBES ERADICATION IN TENNESSEE BY PROJECTS IN 1935

Program	Initial Work	Rework	Total
W. P. A.	$0.144	$ 0	$ 0.144
P. W. A.	0.065	0.356	0.073
E. C. W.	0.225	0.	0.225
Average Cost Per Acre for All Programs	$0.087	$0.356	$ 0.092

TABLE 12 COST DATA FOR RIBES ERADICATION IN TENNESSEE BY YEARS 1933 - 1935

Program	1933	1934	1935	Total all Years
W. P. A.	$ 0	$ 0	$2001.29	$2,001.29
P. W. A.	0	6251.73	2399.23	8,650.96
E. C. W.	1048.83	720.09	73.25	1,842.17
Total	$1048.83	$6971.82	$4473.77	$12,494.42

TABLE 13 COST PER ACRE FOR RIBES ERADICATION IN TENNESSEE BY PROJECTS 1933 to 1935

Program	1933	1934	1935	All Years
W. P. A.	$	$	$0.144	$0.144
P. W. A.	.	0.069	0.073	0.070
E. C. W.	.098	0.059	0.225	0.079
Average Cost Per Acre for all Programs	$.098	$0.068	$0.092	$0.077

TABLE 14 COST DATA FOR RIBES ERADICATION IN TENNESSEE BY WORKING AND YEAR 1933 - 1935

Programs	1933	1934	1935	Total
INITIAL WORK				
W. P. A.	$ 0	$ 0	$2001.29	$2001.29
P. W. A.	0	$6251.73	2086.10	8337.83
E. C. W.	$1048.83	720.09	73.25	1842.17
Total Initial Work	$1048.83	$6971.82	$4160.64	$21,181.29
REWORK				
W. P. A.	$ 0	$ 0	$ 0	$ 0.00
P. W. A.	0	0	313.13	313.13
E. C. W.	0	0	0	0.00
Total Rework	$ 0	$ 0	$313.13	313.13
Grand Total All Work	$1048.83	$6971.82	$4473.77	$12494.42

TABLE 15 COST DATA FOR RIBES ERADICATION IN TENNESSEE BY FIRST AND SECOND WORKINGS 1933 to 1935

Program	Initial Work	Rework	Total
W. P. A.	$2001.29	$ 0	$2001.29
P. W. A.	8337.83	313.13	8650.96
E. C. W.	1842.17	0	1842.17
Total	$12181.29	$313.13	$12494.42

VIRGINIA

Ribes Eradication was begun by the writer in Virginia in 1928 in the George Washington National Forest (at that time known as the Shenandoah National Forest) and has been continued in that Forest since that time, and in the Unaka National Forest in 1933 and 1934, and in the Shenandoah National Park since 1933. Local control began on private land in 1932 and has continued to date.

In 1935, 1314,770 Ribes bushes were destroyed on 92,818 acres of land at an expenditure of 13,666 man-days of labor. The total cost of local control was $31,721.05, of which the Shenandoah National Park expended $15551.75 and the National Forests expended $1096.77.

Since 1928, 231,247 acres of land have been worked; 2704,313 Ribes destroyed at an expenditure of more than 28,461 man-days labor (Data prior to 1933 on man-days labor is lacking).

A set of tables has been prepared showing Ribes eradication in 1935 and for all years, under various headings.

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN VIRGINIA BY PROGRAMS - 1935

Program	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A	41,379	143,517	3,375	44.58
P. W. A.	31,816	311,574	1,339.5	34.28
E. C. W.	19,623	859,679	8,952	21.14
Totals	92,818	1,314,770	13,666.5	100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN VIRGINIA BY FIRST AND SECOND WORKINGS 1935

Workings	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	92,327	1,227,194	13,310.5	13.29
Second	491	87,576	356	178.36
Totals	92,818	1,314,770	13,666.5	14.18

TABLE 3 SHOWING RIBES ERADICATION IN VIRGINIA ACCORDING TO OWNERSHIP OF LANDS - 1935

Ownership	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor
		Wild	Culti.	Total	
Nat'l Forests	6,912	9,359	0	9,359	403.5
Nat'l Parks	12,711	850,345	0	850,345	8548.5
Tot. Fed.Lands	19,623	859,704		859,704	8952.0
Private Land) State Land)	73,195	455,066	8,963	464,029	4714.5
	92,818	1,314,770	8,963	1323,733	13666.5

TABLE 4 SUMMARY OF RIBES ERADICATION IN VIRGINIA BY YEARS 1928 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1928-1931	4,187	13,586	no data available		-
1932	2,848	36,274		12.77	-
1933	22,768	262,045	2,911	11.50	0.12
1934	108,626	1,068,675	11,884	9.84	0.11
1935	92,818	1,323,733	13,666.5	14.26	0.14
Total	231,247	2,704,313	28,461.5	11.61	0.12

TABLE 5 SUMMARY OF ERADICATION RESULTS IN VIRGINIA BY PROGRAMS - 1928 - 1935

Program	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	9,626	56,374	35.	4.16
W.P.A.	41,379	145,153	3,375.	17.89
P.W.A.	124,400	741,275	5,471.5	53.80
E. C.W.	55,842	1761,511	19,580	24.15
Total	231,247	2704,313	28,461.5	100.00

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN VIRGINIA BY FIRST AND SECOND WORKINGS 1928 - 1935

Working	Acreage Worked	No. of Ribes	No. of Man-Days Labor	Ribes Per Acre
First	223,537	2,548,742	27,379	11.40
Second	7,710	155,571	1,082	20,18
Total	231,247	2,704,313	28,461	11.61

TABLE 7 SHOWING RIBES ERADICATION IN VIRGINIA IN NATIONAL FORESTS BY YEARS 1928 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1928-1931	4,187	13,586	data not available	$384,66
1932	1,335	26,073	"	145.40
1933	9,301	7,332	"	1225.36
1934	7,148	26,027	973	1528.92
1935	6,912	9,359	403.5	1096.77
	28,883	82,377	1376.5	4381.11

TABLE 8 SHOWING RIBES ERADICATION IN VIRGINIA IN NATIONAL PARKS - BY YEARS 1928 - 1935

Years	Acreage Worked	No. of Ribes	No of Man-Days Labor	Cost
1933	3,958	243,240	not available	$7656.02
1934 Initial	16,866	~~279,699~~ 539,699	6,534	9227.08
Rework	83	25,525		78.00
1935	12,711	850,345	8,548.5	15551.75
Total	23,618	1,698,809	15,159.5	32512.85

TABLE 9 SHOWING RIBES ERADICATION IN VIRGINIA IN FEDERAL LANDS BY YEARS 1928 - 1935

Year	Acreage Worked	No of Ribes Destroyed	No. of Man-Days Labor	Cost
1928-1931	4,187	13,586	not available	Est. $384.66
1932	1,335	26,073	" "	145.40
1933	13,259	250,572	" "	8881.38
1934	14,097	631,251	7,584	10834.00
1935	~~12,623~~ 19,623	859,704	8,952	16648.52
Total	52,501	1,781,186	16,536	36893.96

TABLE 10 SHOWING RIBES ERADICATION IN VIRGINIA ON STATE AND PRIVATE LANDS BY YEARS 1928 - 1935 INCLUSIVE

Year	Acreage Worked	No of Bushes Destroyed	No. of Man-Days Labor	Cost
1928-1931	0	0	0	$ 0
1932	1,513	10,201	not available	78.11
1933	9,509	11,473	2,911	392.20
1934	94,529	437,424	4,300	19,926.93
1935	73,195	464,029	4,714.5	15,072.53
Total	178,746	923,127	11,925.5	$35,469.77

TABLE 11 SHOWING RIBES ERADICATION IN VIRGINIA ACCORDING TO OWNERSHIP OF LAND 1928 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
Nat'l Lands	52,501	1,781,186	16,536	$36,893.90
State Lands) Private Lands)	178,746	923,127	11,925	35,469.77
Totals	231,247	2,704,313	28,461	$72,363.73

TABLE 12 COST DATA FOR RIBES ERADICATION IN VIRGINIA BY PROJECTS in 1935

Program	Initial Work	Rework	Total
W. P. A.	$7,466.11	$269.40	$7735.51
P. W. A.	7,337.02	0	7337.02
E. C. W.	16,168.54	479.98	16648.52
Total	30,971.67	749.38	31721.05

TABLE 13 COST PER ACRE FOR RIBES ERADICATION IN VIRGINIA BY PROJECTS - 1935

Program	Initial Work	Rework	Total
WPA	$0.181	$1.122	$0.187
PWA	0.230	0	0.230
ECW	0.834	1.912	0.848
Total	$0.335	$1.526	$0.341

TABLE 14 COST DATA FOR RIBES ERADICATION IN VIRGINIA BY WORKING AND YEAR 1928 to 1935

Program	1928 1931	1932	1933	1934	1935	Total
Initial Work						
Regular	$384.66	$173.51	$ 131.25	$ 0	$ 0	$ 689.42
W. P. A.	0	0	0		7466.11	7466.11
P. W. A.	0	0	0	19128.29	7337.02	26465.31
E. C. W.	0	0	8806.28	10856.06	16168.54	35830.88
Total	$384.66	$173.51	$8937.53	$29984.35	$30971.67	$70451.72
Rework						
Regular	$(1)	$ 50.00	$ 0	$ 0	$ 0	$ 50.00
W. P. A.	0	0	0	0	269.40	269.40
P. W. A.	0	0	0	0	0	0
E. C. W.	0	0	336.05	776.58	479.98	1592.61
Total	$ 0	$ 50.00	$336.05	$776.58	$749.38	$1912.01
Grand Tot. All Work	$384.66	$223.51	$9373.58	$30760.93	$31721.05	$72363.73

(1) Cost lumped with Initial cost - Cost for reworking in Virginia was small from 1928 to 1931.

TABLE 15 COST DATA FOR RIBES ERADICATION IN VIRGINIA BY PROJECTS AND WORKING 1928 - 1935

Program	Initial Work	Rework	Total
Regular	$ 689.42	$ 50.00	$ 363.73
W. P. A.	7466.11	269.40	7735.51
P. W. A.	26465.31	0	26465.31
E. C. W.	35830.88	1592.61	37423.49
Total	$70451.72	$1912.01	$72363.73

TABLE 16 COST DATA FOR RIBES ERADICATION IN VIRGINIA 1928 - 1935

Program	1928 to '31	1932	1933	1934	1935	Total
Regular	$384.66	$223.50	$ 131.25	$	$	$
W. P. A.	-	-	-	0	7735.51	7735.51
P. W. A.	-	-	-	19,128.29	7337.02	26465.31
E. C.W.	-	-	9142.33	11,632.64	16648.52	37423.49
Total	$384.66	223.51	$9273.58	$30,760.93	$31721.05	$72363.73

TABLE 17 COST PER ACRE FOR RIBES ERADICATION IN VIRGINIA BY PROJECTS 1928 to 1935

Program	1928 to 1931	1932	1933	1934	1935	Total
Regular	$.092	$0.078	$0.051	$ -	$ -	$0.086
W. P. A.		-	-	-	0.187	0.187
P. W. A.		-	-	0.206	0.230	0.213
E. C. W.		-	0.453	0.725	0.848	0.666
Average All Programs	$.092	$0.078	$0.407	$0.294	$0.341	$0.313

TABLE 18 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES ERADICATION IN VIRGINIA

Program	1935		1928 to 1935	
	Wild Ribes Per Acre	Man-Days Per Acre	All Ribes Per Acre	Man-Days Per Acre
Regular	-	-	5.75	0.0036
W. P. A.	3.49	0.082	3.54	0.082
P. W. A.	9.78	0.042	5.96	0.044
E. C. W.	43.7	0.456	31.50	0.350
Average Per Acre	14.16	0.147	11.67	0.122

TABLE 19 ERADICATION OF WILD AND CULTIVATED RIBES IN VIRGINIA 1928 TO 1935

Year	Wild Bushes	Cultivated Bushes	Total Bushes
1928 to 1931	13,586	2	13,586
1932	36,274	0	36,274
1933	262,045	0	262,045
1934	1,054,750	13,925	1,068,675
1935	1,314,770	8,963	1,323,733
Total All years	2,681,425	22,890	2,704,313

WEST VIRGINIA

Ribes eradication has been carried on in this State since 1928, but this first work up to 1932 was conducted around the Parsons Nursery, hence data for the early years is not included in the following tables. Work outside of nurseries began in 1932 and has been continued to date. In 1935, 37,681 acres were worked and 402,505 wild Ribes destroyed by 3061.6 man-days labor. To date 600,347 Ribes, both wild and cultivated have been removed from 75,389 acres by over 5,605 man-days labor.

The following tables show the work in 1935 and in previous years under various headings.

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN WEST VIRGINIA BY PROGRAMS IN 1935

Program	Acreage Worked in 1935	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	-	-	-	-
W. P. A.	15,536	119,352	1,222.8	41.23
P. W. A.	15,214	230,895	1,135.7	40.38
E. C. W.	6,931	52,258	703.1	18.39
Total	37,681	402,505	3,061.6	100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN WEST VIRGINIA BY FIRST AND SECOND WORKINGS - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	37,681	402,505	3061.6	10.68
Second	0	0	0	0
Total	37,681	402,505	3061.6	10.68

TABLE 3 SHOWING RIBES ERADICATION IN WEST VIRGINIA ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor
		Wild	Culti.	Total	
Nat'l Forest	6,931	52,258	0	52,258	655.1
State and Private Land	30,750	350,247	2027	352,274	2406.5
Total	37,681	402,505	2,027	404,532	3061.6

TABLE 4 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA 1932 to 1935, BY YEARS, (INCLUDING BOTH WILD AND CULTIVATED BUSHES)

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	Man-Days Per Acre
1932	268	2	no record	0.0075	-
1933	4,256	60,748	635	14.25	.149
1934	33,184	135,065	1908	4.07	.057
1935	37,681	404,532	3061.6	10.68	.081
Total	75,389	600,347	5604.6	7.97	.0744

TABLE 5 SUMMARY OF ERADICATION RESULTS IN WEST VIRGINIA 1932 to 1935, BY YEARS

Program	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular	268	2	no record	0.3
W. P. A.	15,536	120,062	1222.8	20.6
P. W. A	46,045	345,734	2409.7	61.2
E. C. W	13,540	134,549	1972.1	17.9
Total	75,389	600,347	5604.6	100.0

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN WEST VIRGINIA 1932 to 1935, BY WORKING

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man Days Labor	Ribes Per Acre
First	72,907	587,760	5,244	8.06
Second	2,482	12,587	361	5.07
Total	75,389	600,347	5,605	7.96

TABLE 7 SHOWING RIBES ERADICATION IN WEST VIRGINIA IN NATIONAL FORESTS 1932 to 1935, BY YEARS

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1932	0	0	0	$ 0
1933	606	36,932	386.0	496.00
1934	2,004	13,612	553.0	868.50
1935	6,931	52,258	655.1	1360.52
Total	9,541	102,802	1,594.1	$2725.02

TABLE 8 SHOWING RIBES ERADICATION IN WEST VIRGINIA ON STATE AND PRIVATE LANDS 1932 to 1935, BY YEARS

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1932	268	2	no record	$ 24.35
1933	3,650	23,816	249 .	836.75
1934	31,180	121,453	1355.	6707.11
1935	30,750	352,274	2406.5	9169.52
	65,848	497,545	4010.5	$16737.73

TABLE 9 SHOWING RIBES ERADICATION IN WEST VIRGINIA ACCORDING TO OWNERSHIP, 1932 to 1935

Ownership	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
Nat'l Forests	9,541	102,802	1594.1	$2,725.02
State and Priv.	65,848	497,545	4010.5	16,737.43
Total	75,389	600,347	5604.6	$19,462.45

TABLE 10 SHOWING ERADICATED WILD AND CULTIVATED RIBES IN WEST VIRGINIA 1932 to 1935 BY YEARS

Year	Wild Bushes	Cultivated Bushes	Total all Years
1932	2		2
1933	60,748	0	60,748
1934	131,679	3,386	135,065
1935	402,505	2,027	404,532
Total	594,934	5,413	600,347

TABLE 11 SHOWING COST OF RIBES ERADICATION IN WEST VIRGINIA IN 1935, BY PROGRAM

Program	Initial Work	Rework	Total
W. P. A.	$4220.22	0	$ 4220.22
P. W. A.	4948.70	0	4948.70
E. C. W.	1360.82	0	1360.52
Total	$10529.74	0	$ 10529.74

TABLE 12 COST PER ACRE, FOR RIBES ERADICATION IN WEST VIRGINIA IN 1935, BY PROGRAM

Program	Initial Work	Rework	Total
W. P. A.	$0.347	$ 0	$0.347
P. W. A.	0.322	0	0.322
E. C. W.	0.196	0	0.196
Average Cost	$0.279	$ 0	$0.279

TABLE 13 COST DATA FOR RIBES ERADICATION IN WEST VIRGINIA 1932 TO 1935, BY PROGRAM

Program	1932	1933	1934	1935	Total
Regular	$24.35	$ -	$		$ 24.35
W. P. A	-	-		$ 4,220.22	4,220.22
P. W. A	-	-	6,548.60	4,948.70	11,497.30
E. C. W		1332.75	1,027.01	1,360.82	3,720.58
Total	$24.35	$1332.75	$7,575.61	$10,529.74	$19,462.45

TABLE 14 COST PER ACRE FOR RIBES ERADICATION IN WEST VIRGINIA 1932 TO 1935, BY PROGRAMS

Program	1932	1933	1934	1935	Total
Regular	$0.098	$ -	$ -	$ -	$0.098
W. P. A	-	-	-	0.347	0.347
P. W. A	-	-	0.212	0.322	0.249
E. C. W	-	0.313	0.436	0.196	0.275
Total	$0.098	$0.313	$0.228	$0.279	$0.258

TABLE 15 COST DATA FOR RIBES ERADICATION IN WEST VIRGINIA 1932 TO 1935, BY WORKING AND YEAR

Program	1932	1933	1934	1935	Total
Initial Work					
Regular	$24.35	$ -	$ -	$ -	$ 24.35
W. P. A	-	-	-	4,220.22	4220.22
P. W. A.	-	-	6235.45	4,948.70	11184.15
E. C. W.	-	1332.75	854.41	1,360.82	3547.98
Total Initial	$24.35	$1332.75	$7089.86	$10529.74	$18976.70
Rework	$ -	$ -	$ -	$ -	$ -
Regular	-	-	-	-	-
W. P. A.	-	-	310.15	-	310.15
E. C. W.	-	-	175.60	-	175.60
Total Rework		$ -	$485.75	$ -	$485.75
GRAND Total All Work	$24.35	$1332.75	$7575.61	$10529.74	$19462.45

TABLE 16 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES ERADICATION BY PROGRAMS IN WEST VIRGINIA

Programs	1935		1932 - 1935	
	Wild Ribes Per Acre	Man-Days Per Acre	All Ribes Per Acre	Man-Days Per Acre
Regular	0	0	.007	-
W. P. A.	7.68	.079*	7.73	.079*
P. W. A.	15.70	.073	7.47	.052
E. C. W.	7.54	.101	9.93	.146
	10.68	.081	7.97	.074

* This data is based on the same number of man-days, since it is not possible to separate man-days for eradication of wild Ribes from man-days for eradication of cultivated Ribes.

SOUTH CAROLINA

Ribes eradication began in 1933 with E. C. W. labor, supervised by one agent or checker. This work was confined to scouting for Ribes on that portion of the Nantahala Forest in South Carolina. No wild or cultivated Ribes were found by this agent, although in 1934, one of our scouts working under P W A, found and destroyed 38 bushes on the Forest.

In 1934 scouting was continued in the white pine-growing counties, bordering the Blue Ridge Mountains, viz; Oconee, Pickens and Greenville, under the P W A Programs. In 1935 work was concluded in the State, all pine lands having been covered; the work having been carried on under both P W A and W P A Programs. No wild Ribes were found in three years work, although 7,475 cultivated bushes belonging to native species of North Carolina and Georgia and belonging to cultivated varities were found and destroyed.

In 1935, 15,651 acres of land were worked and 5,262 Ribes bushes were destroyed by the use of 981 hours of labor. The cost of eradication including supervision amounted to $4207.05.

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN SOUTH CAROLINA BY PROGRAMS IN 1935

Program	Acreage Worked in 1935	No. of Ribes Destroyed	No. of Man Days Labor	Percent of Total Acreage Worked
Regular	0	0	0	0
W. P. A.	4,050	0	596	25.88
P. W. A.	11,601	0	385	74.12
E. C. W.	0	0	0	0
Total	15,651	0	981	100.00

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN SOUTH CAROLINA BY FIRST AND SECOND WORKINGS IN 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	15,651	0	816.5	0.00
Second	0	0	164.5	0
Total	15,651	0	981	0.00

TABLE 3 SUMMARY OF ERADICATION RESULTS IN SOUTH CAROLINA 1933 - 1935 BY PROGRAMS

Program	Acreage Worked 1933-1935	No. of Ribes Destroyed	No. of Man-Days Labor	Percent of Total Acreage Worked
Regular				
W. P. A.	4,050	556	596	14.71
P. W. A.	22,597	6919	798	82.07
E. C.W.	888	0	21	3.22
Total	27,535	7475	1,415	100.00

TABLE 4 SHOWING ERADICATION OF ALL RIBES IN SOUTH CAROLINA BY FIRST AND SECOND WORKING 1933 - 1935

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Ribes Per Acre
First	26,535	7,128	1,241	0.27
Second	1,000	347	174	0.35
Total	27,535	7,475	1,415	0.62

TABLE 5 SHOWING RIBES ERADICATION IN SOUTH CAROLINA ACCORDING TO OWNERSHIP OF LAND IN 1935

Ownership	Acreage Worked	No. of Ribes Destroyed Wild	Culti.	Total	No. of Man-Days Labor
Nat'l Forest	0	0	0	0	0
State and Private Land	15,651	0	5,272	5,272	981
Totals	15,651	0	5,272	5,272	981

TABLE 6 SHOWING RIBES ERADICATION IN SOUTH CAROLINA IN NATIONAL FOREST BY YEARS 1932 to 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	452	0	10	$ 20.00
1934	3000	38	50	1,179.00
1935	0	0	0	0
Totals	3425	38	60	$1,199.00

TABLE 7 SHOWING RIBES ERADICATION IN SOUTH CAROLINA ON STATE AND PRIVATE LANDS 1933 - 1935 BY YEARS

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	463	0	11	$ 23.04
1934	7,996*	2,165	363	1,961.07
1935	15,651	5,272	981	4,207.05
Total	24,110	7,437	1,355	6,191.16

* Acreage worked differs from that originally reported in 1934, since lands were resurveyed in 1935.

TABLE 8 SUMMARY OF RIBES ERADICATION IN SOUTH CAROLINA BY YEARS 1933 - 1935

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Total Cost	Cost Per Acre
1933	888	0	21	$ 43.04	$0.048
1934	10,996*	2,213	413	3,140.07	.285
1935	15,651	5,262	981	4,207.05	.268
Total	27,535	7,475	1,415	$7,390.16	$ .269

* Acreage reported worked in 1934 was reduced in 1935 by a resurvey of the lands

TABLE 9 SHOWING RIBES ERADICATION IN SOUTH CAROLINA ACCORDING TO OWNERSHIP OF LANDS 1933 - 1935

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor
National Forests	3,425	38	60
State and Private) Lands)	24,110	7,437	1,355
Total	27,535	7,475	1,415

TABLE 10 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES ERADICATION IN SOUTH CAROLINA

Programs	Wild Ribes Per Acre	Man-Days Per Acre	All Ribes Per Acre	Man-Days Per Acre
Regular	0	0	0	0
W. P. A	0	.147	0.137	0.147
P. W. A	0	.033	0.31	0.035
E. C. W.	0	0	0	0.021
Total	0	.063	0.271	0.051

TABLE 11 COST DATA FOR RIBES ERADICATION IN SOUTH CAROLINA IN 1935, BY PROJECTS

Program	Initial Work	Rework	Total
Regular	$ 0	$ 0	$ 0
W. P. A	1,542.42	210.00	1,752.42
P. W. A	2,244.63	210.00	2,454.63
E. C. W.	0	0	0
Total	$3,787.05	$420.00	$4,207.05

TABLE 12 COST PER ACRE FOR RIBES ERADICATION IN SOUTH CAROLINA IN 1935, BY PROJECTS

Program	Initial Work	Rework (1)	Total
W. P. A	$ 0.380	-	$0.432
P. W. A.	0.192	-	0.211
Total	$ 0.242	-	$0.286

(1) Reworking was all at house sites, hence no acreage figures are available.

TABLE 13 COST DATA FOR RIBES ERADICATION IN SOUTH CAROLINA FROM 1933 to 1935, BY PROJECTS

Program	1933	1934	1935	Total
INITIAL WORK	$	$	$	$
WPA	-	-	1,542.42	1,542.42
PWA	-	3,099.57	2,244.63	5,344.20
ECW	43.04	-	0.	43.04
Total INITIAL WORK	$43.04	$3,099.57	$3,787.05	$6,929.66
REWORK	$	$	$	$
W. P. A.	-	-	210.00	210.00
P. W. A.	-	40.50	210.00	250.50
E. C. W.	-		0	0.
Total Rework	$ -	$ 40.50	$ 420.00	$ 460.50
GRAND TOTAL ALL Work	$43.04	$3,140.07	$ 4207.05	$7,390.16

TABLE 14 COST DATA FOR RIBES ERADICATION IN SOUTH CAROLINA, FROM 1933 TO 1935, BY WORKING AND PROJECT

Program	Initial Work	Rework	Total Work
W. P. A.	$1,542.42	$210.00	$1,752.42
P. W. A.	5,344.20	250.50	5,594.70
E. C. W.	43.04	0	43.04
Totals	$6,929.66	$460.50	$7,390.16

TABLE 15 COST PER ACRE FOR RIBES ERADICATION IN SOUTH CAROLINA 1933 - 1935, BY PROJECTS

Program	1933	1934	1935	Total
W. P. A.-	$ -	$ -	0.432	0.432
P. W. A.	-	0.285	0.211	0.236
E. C. W.	-	-	0	0.043
Average Cost For All Programs	$0.048	$0.285	$0.268	$0.269

BLACK CURRANT ERADICATION

Cultivated black currants are removed at same time as other currants, but are noted separately. Only 3 locations were noted in 1935, one in Georgia, and one in North Carolina. 30 black currants were destroyed during the year.

In the Southern States Ribes nigrum has never been cultivated widely; although in western Maryland there are one or two centers with German population where this species is quite common.

Treatment of Infected White Pine

Virginia is the only state in which this is practiced. In 1935, the Shenandoah National Park using CCC labor examined for blister rust 14,755 white pines, the majority being under 20 feet in height, treated 1,795 trees, removing 9,296 blister rust cankers, and 277 dead or dying trees (killed or dying from blister rust) at an expenditure of 295 man-days labor.

Nursery Sanitation

In 1915, 17 nurseries were inspected as follows: Delaware 2, Maryland 8, Virginia 6, West Virginia 1. A total of 21,691 acres were worked, 2,180 Ribes destroyed, at an expenditure of 149 man-days labor. Thirteen nurseries requested federal permits and received them, as follows: Maryland 6, Virginia 6, West Virginia 1.

BLISTER RUST CONTROL IN 1935 BY PROJECTS
Southern Appalachian Region
Initial Work and Subsequent Workings, Excluding Nursery Sanitation

Acreage Worked

State	P. W. A. Total	P. W. A. Initial	P. W. A. Rework	W. P. A. Total	W. P. A. Initial	W. P. A. Rework	E. C. W. Total	E. C. W. Initial	E. C. W. Rework	Total All Programs Total	Total All Programs Initial	Total All Programs Rework
Georgia	48,975	48,975	(1) 0	124,122	124,122	0	0	0	0	173,097	173,097	0
Maryland	18,642	5,360	13,282	18,487	18,487	0	5,733	412	5,321	42,862	24,259	18,603
North Carolina	347,171	331,771	15,400	241,189	241,189	0	0	0	0	588,360	572,960	15,400
South Carolina	11,601	11,601	0	4,050	4,050	0	0	0	0	15,651	15,651	0
Tennessee	32,802	31,923	879	15,439	15,439	0	406	406	0	48,647	47,768	879
Virginia	31,816	31,816	0	41,379	41,139	240	18,623	19,372	251	92,818	92,327	491
West Virginia	15,214	15,214	0	15,536	15,536	0	6,931	6,931	0	37,681	37,681	0
Total	506,221	476,660	29,561	460,202	459,962	240	32,693	27,121	5,572	999,116	963,743	35,373

(1) 297 house sites were reworked.

White Pine Area Protected

State	P. W. A. Total	P. W. A. Initial	P. W. A. Rework	W. P. A. Total	W. P. A. Initial	W. P. A. Rework	E. C. W. Total	E. C. W. Initial	E. C. W. Rework	Total All Programs Total	Total All Programs Initial	Total All Programs Rework
Georgia	16,325	16,325	0	41,374	41,374	0	0	0	0	57,699	57,699	0
Maryland	14,770	2,375	12,395	3,854	3,854	0	2,274	174	2,100	20,898	6,403	14,495
No. Carolina	176,747	169,347	7,400	91,827	91,827	0	0	0	0	268,574	261,174	7,400
So. Carolina	5,646	5,646	0	1,916	1,916	0	0	0	0	7,562	7,562	0
Tennessee	1,772	893	879	4,988	4,988	0	276	276	0	7,036	6,157	879
Virginia	9,345	9,345	0	8,859	8,779	80	6,769	6,644	125	24,973	24,768	205
West Virginia	6,179	6,179	0	5,075	5,075	0	928	928	0	12,182	12,182	0
Total	230,784	210,110	20,674	157,893	157,813	80	10,247	8,022	2,225	398,924	375,945	22,979

Children under cover
Southern Appal
Initial Work and Maine

Acreage Cotton

	U. S. A.		P. W. A.		U. S. A.
	Total	Initial	Work (1)	Total	Initial
	45,076	44,045	0	134,122	124,122
	18,442	3,300	18,282	16,427	16,427
rolina	347,171	321,171	16,400	241,189	241,189
rolina	11,001	11,001	0	4,000	4,000
e	32,002	21,945	270	16,462	16,462
	31,812	31,812	0	41,679	41,129
ginia	16,214	16,114	0	16,656	16,656
	906,221	472,000	34,851	400,202	400,102

(1) 277 house sites were remarked.

	U. S. A.		P. W. A.		U. S. A.
	Total	Initial	Work	Total	Initial
	16,525	10,315	0	41,374	41,374
	14,770	2,278	12,389	3,564	3,564
lina	176,747	160,347	7,400	91,027	91,027
lina	3,000	1,040	0	1,910	1,910
o	1,772	302	870	4,386	4,386
	3,340	4,342	0	3,559	3,779
ginia	5,179	5,179	0	5,075	5,075
	280,764	210,120	20,474	187,005	187,002

BLISTER RUST CONTROL IN 1935 BY PROJECTS
Southern Appalachian Region
Initial Work and Subsequent Workings, Excluding Nursery Sanitation

Ribes Removed Both Wild And Cultivated

State	P. W. A. Total	P. W. A. Initial	P. W. A. Rework	W. P. A. Total	W. P. A. Initial	W. P. A. Rework	E. C. W. Total	E. C. W. Initial	E. C. W. Rework	Total All Programs Total	Total All Programs Initial	Total All Programs Rework
Georgia	12,509	11,850	659	810,772	810,772	0	0	0	0	823,281	822,622	659
Maryland	115,823	54	115,769	309,119	309,119	0	274,515	203,158	71,357	699,457	512,331	187,126
No. Carolina	50,823	46,704	4,119	210,239	210,239	0	0	0	0	261,062	256,943	4,119
So. Carolina	4,706	4,389	317	556	556	0	0	0	0	5,262	4,945	317
Tennessee	117,923	60,695	57,228	194,922	194,922	0	11,631	11,631	0	324,476	267,248	57,228
Virginia	318,876	318,876	0	145,153	138,418	6,735	859,704	778,810	80,894	1323,733	1236,104	87,629
W. Virginia	232,212	232,212	0	120,062	120,062	0	52,258	52,258	0	404,532	404,532	0
Total	852,872	674,780	178,092	1790,823	1784,088	6,735	1198,108	1045,857	152,251	3841,803	3504,725	337,078

Labor - Man Days

	P. W. A. Total	P. W. A. Initial	P. W. A. Rework	W. P. A. Total	W. P. A. Initial	W. P. A. Rework	E. C. W. Total	E. C. W. Initial	E. C. W. Rework	Total All Programs Total	Total All Programs Initial	Total All Programs Rework
Georgia	98	64	34	2,777	2,777	0	0	0	0	2,875	2,841	34
Maryland	812	24	788	1,605	1,605	0	863	288	575	3,280	1,917	1,363
North Carolina	808	664	144	6,545	6,545	0	0	0	0	7,974	7,830	144
South Carolina	243	183	60	488	408	80	0	0	0	731	591	140
Tennessee	279.25	237	42.25	1,108	1,108	0	35.84	35.84	[illegible]	1,423.09	1,380.84	42.25
Virginia	962.5	962.5	0	3,224	3,128	96	8913.0	8655.0	258	13,099.5	12,745.5	354
W. Virginia	994.2	994.2	0	1,033.3	1,033.3	0	655.1	655.1	0	2,682.6	682.6	0
Total	4196.95	3128.5	1068.25	16,780.3	16,604.3	176	10466.94	9633.94	833	32065.19	32,987.94	2077.25

BLISTER RUST CONTROL IN 1935 BY PROJECTS
Southern Appalachian Region
Initial Work and Subsequent Workings, Excluding Nursery Sanitation

Supervision Man Day's (including State Leaders only in S. Carolina and Georgia) (1)

State	P. W. A. Total	P. W. A. Initial	P. W. A. Rework	W. P. A. Total	W. P. A. Initial	W. P. A. Rework	E. C. W. Total	E. C. W. Initial	E. C. W. Rework	Total All Programs Total	Total All Programs Initial	Total All Programs Rework
Georgia	178	144	34	184	184	0	0	0	0	362	328	34
Maryland	225	30	225	165	165	0	0	0	0	420	195	225
North Carolina	480	477	3	198	198	0	0	0	0	57	54	3
South Carolina	142	128	14	108	98	10	0	0	0	250	226	24
Tennessee	226.5	195	31.5	0	0	0	0	0	0	226.5	195	31.5
Virginia	377	377	0	151	149	2	39	39	0	567	565	2
W. Virginia	141.5	141.5	0	189.5	189.5	0	48	48	0	379.0	379	0
Total	1,800	1492.5	307.5	995.5	983.5	12	87	87		2261.5	1942	319.5

(1) In Georgia all of State Leaders salary from January 1 to June 30, and one half of his salary after August 20 is included.

Total Man Days Including Labor and Supervision

Georgia	276	208	68	2961	2961	0	0	0	0	3237	3169	68
Maryland	1067	54	1013	1770	1770	0	863	288	575	3700	2112	1588
North Carolina	1288	1141	147	6743	6743	0	0	0	0	8031	7884	147
South Carolina	385	311	74	596	506	90	0	0	0	981	817	164
Tennessee	505.75	432	73.75	1108	1108	0	35.84	35.84	0	1649.59	1575.84	73.75
Virginia	1389.5	1339.5	0	3375	3277	98	8952	8694	258	13666.5	13310.5	356.
West Virginia	1135.7	1135.7	0	1222.8	1222.8	0	703.1	703.1	0	3061.6	3061.6	0
Total	5997	4621	1376	17776	17588	188	10554	9721	833	34327	31930	2397

Southern Ry
Initial Work and Subsequent

Supervision Man Days (Including State I

	F. E. A.			E. F. A.	
	Total	Initial	Rework	Total	Initial
	173	144	24	184	164
	225	59	225	166	166
olina	460	471	3	136	128
olina	142	123	14	108	98
	22[illegible].5	195	21.5	0	0
	377	377	0	151	143
ia	141.5	141.5	0	189.5	189.5
	1,800	1192.5	207.5	985.5	985.5

(1) In Georgia all of State boarders salary from January 1 to June 3,

Total Man Hr

	276	208	68	2[illegible]1	2301
	107	54	1013	1770	1770
olina	1286	1141	147	0743	0743
olina	386	312	74	383	300
	603.75	427	75.75	1105	1105
	1889.5	1283.5	0	827	827
inia	1135.7	1135.7	0	1723.5	1723.5
	5927	4021	1375	1777[illegible]	1756[illegible]

BLISTER RUST IN 1935, BY PROJECTS
Southern Appalachian Region

Sheet D

Cost Data for Blister Rust Control (Ribes Eradication) excl. State Leaders except in Georgia & South Carolina

	P. W. A.			W. P. A.			E. C. W.			Total All Programs			Regular Work	
	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework	Total	Initial
Georgia	2701.50	2701.50	0	7603.73	7603.78	0	863.00	0	0	1305.28	10305.28	0		
Maryland	4046.89	137.71	3909.18	5196.36	5196.36	0	863.00	288.00	575.00	10106.25	5622.07	4484.18		
No. Carolina	8388.24	7557.68	830.56	14779.59	14779.59	0	0	0	0	23167.83	22337.27	830.56	Included under WPA	
So. Carolina	2454.63	2244.63	210.00	1752.42	1542.42	210	[illegible]	0	0	4207.05	3787.05	420.00		
Tennessee	2399.23	2086.10	313.13	2001.29	2001.29	0	73.25	73.25	0	4473.77	4160.64	313.13		
Virginia	7337.02	7337.02	0	7735.51	7466.11	269.40	16648.52	16168.54	479.98	31721.05	30971.67	749.38		
W. Virginia	4948.70	4948.70	0	4221.22 (1)	4221.22	0	1360.52	1360.52	0	10529.74	10529.74	0	819.95	819.95
Total	32276.21	27013.34	5262.87	43290.17	42810.77	479.40	18945.29	17890.31	1054.98	94510.97	87713.72	6797.25		

(1) Includes some rainy days, also $819.95 paid by State for Agents salaries and expenses.

COST PER ACRE

Georgia (1)	0.055	.055		0.061	0.061	0	0	0	0	0.059	0.059	0
Maryland	.217	.026	.294	0.281	0.281	0	0.15	0.70	0.108	0.24	0.232	0.241
No. Carolina	0.025	.022	.0604	0.061	0.06	0	0	0	0	0.039	0.039	0.054
So. Carolina	0.211	.107		0.432	0.432	0	0	0	0	0.286	0.242	
Tennessee	0.073	.065	.356	0.144	0.144	0	0.225	0.225	0	0.092	0.087	0.356
Virginia	0.230	.230	0	0.187	0.181	1.122	0.848	0.834	1.912	0.341	0.335	1.526
West Virginia	0.322	.322	0	0.347	0.347	0	.196	.196	0	0.279	0.279	0
Total	0.063	.056	.178	0.094	0.093	1.99 (2)	0.579	0.659	0.189	0.094	0.091	0.192

(2) This figure 1.99 represents an average, but is not accurate since in S. Carolina only individual houses were reworked representing no acreage.

RIBES PER ACRE

Georgia	0.25	0.24	(3) .221	6.53	6.53	0	0	0	0	4.75	4.75	(3) 2.21
Maryland	6.20	.01	8.73	16.7	16.7	0	47.8	493.1	13.41	16.32	21.12	10.06
No. Carolina	0.14	0.14	.26	0.9	0.9	0	0	0	0	0.46	.45	.26
So. Carolina	.40	0.38		0.13	0.13	0	0	0	0	0.33	.31	(2)
Tennessee	3.59	0.52	65.10	12.62	12.62	0	28.67	28.67	0	6.67	5.59	65.10
Virginia	10.20	10.20	0	3.50	3.36	28.06	43.8	40.20	322	14.26	13.39	178.47
W. Virginia	15.30	15.3	0	7.70	7.70	0	7.54	7.5	0	10.7	10.7	0
	1.68	1.41	6.02	3.88	3.88	28.06	36.64	38.56	27.36	3.84	3.64	9.50

(1) Includes Supervision of State Leader part time
(2) Impossible to figure for bushes were found only at homes and home sites on reworking necessitating no survey of woodland.
(3) In Georgia 297 house sites were revisited, 659 bushes were removed in reworking or an acreage of 2.21 bushes at each house site.

BLISTER RUST CONTROL WORK IN SOUTHERN APPALACHIAN STATES
Up to and Including 1935, Excluding Nursery Sanitation

Sheet E.

INITIAL WORK

State	1928 to 1934 inclusive Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	1935 Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	1928 to 1935 Inclusive Acres Worked	No. of Ribes Removed	Cost	Per Acre Cost	Ribes
Delaware	8	0	$ 3.50	0.437	0	0	0	0	0	0	8	0	3.50	0.437	0
Georgia	142,213	12,744	4,070.02	0.029	0.09	173,097	822,622	10,305.28	0.059	4.75	315,310	835,366	14,375.30	0.045	2.65
Kentucky	61,523	3,925	4,345.24	0.071	0.06	0	0	0	0	0	61,523	3,925	4,345.24	0.071	0.06
Maryland	109,385	1,115,722	9,930.35	0.091	10.19	24,259	512,331	5,622.07	0.232	21.12	133,644	1,628,053	15,552.42	0.116	12.10
N. Carolina	612,180	100,682	17,151.82	0.280	0.16	572,960	256,943	22,337.27	0.039	0.45	1,185,140	357,625	39,489.19	0.033	0.302
S. Carolina	29,716	2,183	3,142.61	0.106	0.07	15,651	4,945	3,787.05	0.242	0.31	45,367	7,128	6,929.66	0.152	0.15
Tennessee	112,308	128,168	8,020.65	0.071	1.14	47,768	267,248	4,160.34	0.087	5.59	160,076	395,416	12,181.29	0.075	2.47
Virginia	131,210	1,312,638	39,480.05	0.301	10.00	92,327	1,236,104	30,971.67	0.335	13.39	223,537	2,548,742	70,451.72	0.315	11.40
W. Virginia	35,226	183,228	8,446.96	0.240	5.20	37,681	404,532	10,529.74	0.279	10.7	72,907	587,760	18,976.70	0.263	8.06
Total	1,233,769	2,859,290	94,591.30	0.077	2.32	963,743	3,504,725	87,713.72	0.091	3.64	2,197,512	6,364,015	182,305.02	0.083	2.89

REERADICATION

State	Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	Acres Worked	No. of Ribes Removed	Cost	Per Acre Cost	Ribes
Georgia	0	0	0	0	0	0	659	$ -	-	(1) 2.21		659	-	-	(1) 2.21
Maryland	469	37,886	204,73	0.436	80.78	18,603	187,126	4,484.18	0.241	10.06	19,072	225,012	4,688.91	0.246	11.79
N. Carolina	0	0	0	0	0	15,400	4,119	830.56	0.054	0.26	15,400	4,119	830.56	0.053	0.27
S. Carolina	1,000	30	40,50	0.040	0.03	0	317	420.00			1,000	347	460.50	0.460	0.34
Tennessee	0	0	0	0	0	879	57,228	313.13	0.356	65.10	879	57,228	313.13	0.356	65.10
Virginia	7,219	67,942	1,162.63	0.161	9.41	491	87,629	749.38	1.526	178.47	7,710	155,571	1,912.01	0.248	20.18
W. Virginia	2,482	12,587	485.75	0.196	5.07	0	0	0	0	0	2,482	12,587	485.75	0.196	5.07
Total	11,170	118,445	1,893.61	0.170	10.60	35,373	337,078	6,797.25	0.192	9.50	46,543	455,523	8,690.86	0.187	9.78

(1) Average No. bushes per house site worked.

COMBINED INITIAL AND REERADICATIVE WORK

State	Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	Acres Worked	No. Ribes Removed	Cost	Per Acre Cost	Ribes	Acres Worked	No. of Ribes Removed	Cost	Per Acre Cost	Ribes
Delaware	8	0	3.50	0.437	0	0	0	0	0	0	8	0	3.50	$0.437	0
Georgia	142,213	12,744	4,070.02	0.029	0.09	173,097	823,281	10,305.28	0.059	4.75	315,310	836,025	14,375.30	0.045	2.96
Kentucky	61,523	3,925	4,345.24	0.071	0.06	0	0	0	0	0	61,523	3,925	4,345.24	0.071	0.06
Maryland	109,854	1,153,608	10,135.08	0.092	10.50	42,862	699,457	10,106.25	0.24	16.32	152,716	1,853,065	20,241.33	0.132	12.13
N.Carolina	612,180	100,682	17,151.92	0.280	0.16	588,360	261,062	23,167.83	0.039	0.46	1,200,540	361,744	40,320.55	0.033	.30
S.Carolina	30,716	2,213	3,183.11	0.104	0.07	15,651	5,262	4,207.05	0.286	0.33	46,367	7,475	7,390.16	0.159	.16
Tennessee	112,308	128,168	8,020.65	0.071	1.14	48,647	324,476	4,473.77	0.092	6.67	160,955	452,674	12,494.42	0.077	2.81
Virginia	138,429	1,380,580	40,642.68	0.294	9.97	92,818	1,323,733	31,721.05	0.341	14.26	231,247	2,704,313	72,363.73	0.313	11.61
W. Virginia	37,708	195,815	8,932.71	0.237	5.19	37,681	404,532	10,529.74	0.279	10.7	75,389	600,347	19,462.45	0.258	7.96
Total	1,244,939	2,977,735	96,484.91	0.078	2.39	999,116	3,841,803	94,510.97	0.094	3.84	2,244,055	6,819,538	190,995.88	0.085	3.03

	0	0	0.027	0.00	0	0
222,[illegible]	172,027	0.09	0.023	4,070.02	12,744	142,213
	0	0.00	0.072	4,845.24	5,025	01,825
112,[illegible]	20,000	10.19	0.001	3,730.12	1,115,724	109,745
228,[illegible]	272,000	0.16	0.220	17,123.82	10,032	012,100
0.20	35,001	0.07	0.725	3,162.67	3,188	20,710
107,[illegible]	97,724	1.14	0.771	0,720.07	124,102	112,202
1,[illegible]	82,327	10.00	0.801	83,000,000	1,818,820	121,210
[illegible]	27,021	0.70	0.440	1,440.0	103,221	71,222
1,[illegible]	302,728	2.00	0.277	94,1[illegible],80	4,745,250	285,709

	0	0	0	0	0	0
187,	18,803	20.76	0.455	20,178	87,886	400
4,	14,400	0	0	0	0	0
	0	0.05	0.040	40,80	80	1,000
47,	675	0	0	0	0	0
27,	941	2.41	0.161	1,102.03	7,642	7,215
	0	8.07	0.186	186.78	12,627	2,402
(457)	22,378	2.00	0.170	1,[illegible],01	116,448	1,170

	0	0	0.427	3.00	0	0
222,	172,027	0.09	0.[illegible]	4,070.02	12,744	142,213
	0	0.00	0.072	4,845.24	5,025	01,828
095,	42,820	10.30	0.042	1,1[illegible].00	1,115,000	109,044
1000	812,800	7.16	0.266	1,1[illegible].12	100,000	012,160
0,	10,000	0.07	0.174	3,145.17	2,278	30,716
324,	40,847	1.14	0.771	0,020.08	122,100	112,208
1,[illegible]	82,[illegible]	0.17	0.[illegible]	40,042.00	1,000,020	180,420
40,	27,081	0.12	0.287	0,072.71	108,010	87,702
8,[illegible]	380,110	0.00	0.071	1,[illegible].1	2,277,105	244,080

BLISTER RUST IN 1935 ACCORDING TO AGENCIES
Southern Appalachian States
(Excluding Nursery Sanitation)

(Under E. C. W. Program)

States	ACREAGE WORKED			PINE AREA PROTECTED			RIBES REMOVED			LABOR MAN-DAYS		
	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework
Maryland	5,733	412	5,321	2,274	174	2,100	274,515	203,158	71,357	863	288.	575
Tennessee	406	406	0	276	276	0	11,631	11,631	0	35.84	35.84	0
Virginia	19,623	19,372	251	6,769	6,644	125	859,704	778,810	80,894	8913.0	8655.0	258
W. Virginia	6,931	6,931	0	928	928	0	52,258	52,258	0	655.1	655.1	
Total	32,693	27,121	5,572	10,247	8,022	2,225	1198,108	1045,857	152,251	10,466.94	9633.94	833

WORK ON FEDERAL LANDS

W. Va. G. W. Nat'l Forest	6,931	6,931	0	928	928	0	52,258	52,258	0	655.1	655.1	0
Va. G. W. Nat'l Forest	6,912	6,912	0	3,294	3,294	0	9,359	9,359	0	364.5	364.5	0
Shenandoah Nat'l Park	12,711	12,460	251	3,475	3,350	125	850,345	769,504	80,841	8548.5	8290.5	258
Total in Va.	19,623	19,372	251	6,769	6,644	125	859,704	778,863	80,841	8913.0	8655.0	258
Total in Va. and W. Va	26,554	26,303	251	7,697	7,572	125	911,962	831,121	80,841	9568.1	9310.1	258

WORK ON BOTH STATE AND FEDERAL LANDS

	SUPERVISION MAN-DAYS			COSTS, TOTAL			COST PER ACRE			RIBES PER ACRE		
Maryland	0 (1)	0	0	863.00	288.00	575.00	0.15	0.70	0.108	47.8	493.1	13.41
Tennessee	0 (1)	0	0	73.25	73.25	0	0.225	0.225	0	28.67	28.67	0
Virginia	39	39	0	16,648.52	16,168.54	479.98	0.848	0.834	1.912	43.8	40.20	322.
West Virginia	48	48	0	1,360.52	1,360.52	0	0.195	0.195	0	7.54	7.54	0
Total	87	87	0	18,945.29	17,890.31	1,054.98	0.579	0.659	0.189	36.64	38.56	27.36

WORK ON FEDERAL LANDS

Va. G. W. Nat'l Forest	39	39	0	1,096.77	1,096.77	0	0.177	0.177	0	1.354	1.354	0
Shenandoah Nat'l Park	-	-0	0	15,551.75	15,071.77	479.98	1.250	1.209	1.912	65.1	61.75	322
Total for Va.	39	39	0	16,648.52	16,168.54	479.98	0.848	0.834	1.912	43.8	40.20	322
W. Va. G. W. Nat'l Forest	48	48	0	1,360.52	1,360.52	0	0.195	0.195	0	7.54	7.54	0
	87	87	0	18,009.04	17,529.06	479.98	0.678	0.666	1.912	34.34	31.55	322

BLISTER RUST CONTROL IN 1935 ACCORDING TO AGENCIES
Southern Appalachian States
(Excluding Nursery Sanitation)

(Under Public Works Administration P. W. A.)

	ACREAGE WORKED			PINE AREA PROTECTED			RIBES REMOVED Wild - Cultivated			LABOR MAN-DAYS including Scouts in Virginia		
	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework
Georgia	48,975	48,975 (1)	0	16,325	16,325	0	12,509	11,850	659	98	64	34
Maryland	18,642	5,360	13,282	14,770	2,375	12,395	115,823	54	115,769	812	24	788
North Carolina	347,171	331,771	15,400	176,747	169,347	7,400	50,823	46,704	4,119	808	664	144
South Carolina	11,601	11,601 (2)	0	5,646	5,646	0	4,706	4,389	317	243	183	60
Tennessee	32,802	31,923	879	1,772	893	879	117,923	60,695	57,228	279.25	237	42.25
Virginia	31,816	31,816	0	9,345	9,345	0	318,876	318,876	0	962.5	962.5	0
W. Virginia	15,214	15,214	0	6,179	6,179	0	232,212	232,212	00	994.2	994.2	0
Total	506,221	476,660	29,561	230,784	210,110	20,674	852,872	674,780	178,092	4196.95	3128.5	1068.25

(1) 297 house sites were reworked (2) Cultivated Bushes removed - acreage not calculated.

	Supervision Man-Days			Cost - Total			Cost Per Acre			Ribes Per Acre		
Georgia	178	144	34	2,701.50	2,701.50	0	.055	.055	[illegible]	0.25	0.24	(3) 2.21
Maryland	225	30	225	4,046.89	137.71	3,909.18	.217	.026	.294	6.20	0.01	8.73
No. Carolina	480	477	3	8,388.24	7,557.68	830.56	.025	.022	.060	0.146	0.140	.26
So. Carolina	142	128	14	2,454.63	2,244.63	210.00	.211	.107	-	0.40	0.38	-
Tennessee	226.5	195	31.5	2,399.23	2,086.10	313.13	0.073	.065	.356	3.59	0.52	65.10
Virginia	377.	377	0	7,337.02	7,337.02	0	0.230	.230	0	10.20	10.20	0
W. Virginia	141.5	141.5	0	4,948.70	4,948.70	0	0.322	.322	0	15.30	15.30	0
	1,800	1,492.5	307.5	32,276.21	27,013.34	5,262.87	0.063	0.056	0.178	1.68	1.41	6.02

(3) Average no. of bushes per house site examined was 2.21 on reworking.

BLISTER RUST CONTROL IN 1935 ACCORDING TO AGENCIES
Southern Appalachian States
(Excluding Nursery Sanitation)

(Under Works Progress Administration W. P. A.)

States	ACREAGE WORKED			PINE AREA PROTECTED			Ribes REMOVED			LABOR MAN-DAYS		
	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework	Total	Initial	Rework
Georgia	124,122	124,122	0	41,374	41,374	0	810,772	810,772	0	2,777	2,777	0
Maryland	18,487	18,487	0	3,854	3,854	0	309,119	309,119	0	1,605	1,605	0
No. Carolina	241,189	241,189	0	91,827	91,827	0	210,239	210,239	0	6,545	6,545	0
So. Carolina	4,050	4,050	0	1,916	1,916	0	556	556	0	488	408	80
Tennessee	15,439	15,439	0	4,988	4,988	0	194,922	194,922	0	1,108	1,108	0
Virginia	41,379	41,139	240	8,859	8,779	80	145,153	138,418	6,735	3,224	3,128	96
West Virginia	15,536	15,536	0	5,075	5,075	0	120,062	120,062	0	1,033.3	1,033.3	0
Total	460,202	459,962	240	157,893	157,813	80	1,790,823	1,784,088	6,735	16,780.3	16,604.3	176

	SUPERVISION MAN-DAYS			COSTS - TOTAL			COST PER ACRE			RIBES PER ACRE		
Georgia	184	184	0	7,603.78	7,603.78	0	0.061	0.061	0	6.53	6.53	0
Maryland	165	165	0	5,196.36	5,196.36	0	0.281	0.281	0	16.7	16.7	0
North Carolina	198	198	0	14,779.59	14,779.59	0	0.06	0.06	0	0.9	0.9	0
South Carolina	108	98	10	1,752.42	1,542.42	210	0.432	0.432	0	0.13	0.13	0
Tennessee	0	0	0	2,001.29	2,001.29	0	0.144	0.144	0	12.62	12.62	0
Virginia	151	149	2	7,735.51	7,466.11	269.4	0.187	0.181	1.122	3.50	3.36	28 .06
West Virginia	189.5	189.5	0	4,221.22	4,221.22	0	0.347	0.347	0	7.70	7.70	0
	995.5	983.5	12	43,290.17	42,810.77	479.4	0.094	0.093	1.99	3.88	3.88	28.06

Total	Initial	Total
124,122	124,122	41,974
15,407	15,487	3,554
241,165	241,189	91,627
4,450	4,050	1,316
16,429	16,459	4,300
41,276	41,158	5,779
15,000	15,000	5,076
469,202	469,[illegible]	151,673

NURSERY SANITATION IN SOUTHERN APPALACHIAN STATES

IN 1935

Sheet I

State	Nursery	Location	White Pine In Nursery	Control Record: Acerage Examined	Control Record: Man-Days Labor	Ribes Removed	Ribes not Removed	Permit Granted	COST RECORD: State Costs	COST RECORD: Federal Costs	COST RECORD: Total Costs	Initial or Reworking
Delaware	Del-Mar-Va Nursery	Lincoln	[illegible]	10	0.25	15	0		0	2.50	2.50	Reworking
"	State Forest	Lincoln	200,000	10	0.25	0	0		0	2.50	2.50	"
	Total		200,000	20	0.50	15				5.00	5.00	
Maryland	Gude & Son, A.	Ashton, Derwood	3,000	372	1	0	0	Yes		10.00	10.00	Reworking
	Quaint Acres Nursery	Silver Spring	116	186	1	0	0	Yes		10.00	10.00	"
	Rock Creek Nursery	Rockville(Halpine)	290	186	1	0	0	Yes		10.00	10.00	
	Rolandhurst Nursery	Hebron	245	186	1	0	0	Yes		10.00	10.00	Reworking
	Small & Sons, J. H.	Norbeck	245	186	1	0	0	Yes	5.00 (?)	10.00	15.00 (?)	"
	State Forest Nursery	College Park	40,000	2,250	0.5	4	0		2.00 (?)	5.00	7.00	"
	" " "	Sunny Side	186,000	2,240	1	3	0			5.00	5.00	Initial
	Towson Nursery	Ashland	5,350	372	0.5	11	0	Yes			5.00	Reworking
	Totals		235,246	7,838	7.0	18		Yes		60.00	72.00	
Virginia	Alta Vista Nursery	Alta Vista	1,500	200	1.0	0	0	Yes	0	12.00	12.00	Reworking
	E. W. Jones & Co. *	Woodlawn	25,000	12,800	20.7	1368	208	Yes	0	126.02	126.02	Initial
	State Forest Nursery	Charlottesville	57,000	100	2.0	0	0	Yes	0	13.00	13.00	Reworking
	Titus Nursery Co.,	Waynesboro	350	200	1.5	17	0	Yes	0	16.00	16.00	"
	Westcott Nursery Co.	Falls Church	14,500	50	0.5	0	-	Yes	0	5.00	5.00	"
	Wood-Howell Nursery	Bristol	2,000	150	2.0	26	-	Yes	0	23.00	23.00	Initial
	Total		100,350	13,500	27.7	1411				195.02	195.02	
WEST Virginia	U. S. Forest Service	Parsons	660,000	333	114.	736	-	Yes		450.70	450.70	Reworking
GRAND TOTALS			1,195,596	21,691	149.2	2,180				710.72	722.72	

* Of these 1345 Ribes pulled at the Jones Nursery in Virginia only 114 were within 1500 feet, the balance being found between 1500 ft. and 1 mile distant. The Jones Nursery consists of 105 acres of young native pine in 8 separate blocks.

Year	Name of Nursery	Location	Number of Seedlings Produced
1940	Tri-State Nursery	Lincoln	10,000,000
	Eastern Nebraska Nursery	Lincoln	10,000,000
	(2 nos.)		20,000,000
1941	Jones & Son, R.	Lamar, Colorado	172,000
	Rocky Ford Nursery	Silver Springs	144,000
	Rocky Ford Nursery	Springfield, Missouri	120,000
	Hollenbeck Nursery	Denver	100,000
	Small & Long, R. H.	Denver	100,000
	Great Western Nursery	Colliers Park	2,250,000
	" " "	Cory & Ellis	2,250,000
	Larson Nursery	Ashland	4,500,000
	(7 nos.)		7,638,000
1942	Alta Vista Nursery	Alta Vista	250,000
	E. H. Jones & Co.	Moorland	12,000,000
	Stable Forest Nursery	Springfield, Missouri	100,000
	Hilts Nursery Co.	Hopkinsville	200,000
	Westcott Nursery Co.	Mill Branch	60,000
	Non-Commercial Nursery	Ashland	100,000
	(5 nos.)		12,650,000

Since 1942 there have been no commercial nurseries in Nebraska producing only 1142 nurseries consists of 100 acres or more devoted entirely to growing seedlings for U. S.

Total U. S. Forest Service	Nurseries	[illegible]	333
		1,300,000	11,001

NURSERY SANITATION IN SOUTHERN APPALACHIAN STATES

1928 TO 1935 INCLUSIVE

Year	No. Nurseries Worked	No. Acres Worked	No. Ribes Destroyed	No. Man-Days Labor
1935	17	21,691	2,180	149
1934	13	34,140	3,581	213
1933	14	3,141	4,030	207.5
1932	5	6,739	2,645	10
1931	1	534	1,350	10.3
1930	1	352	404	7.2
1929	1	414	3,189	18.6
1928	1	-	22	1
GRAND TOTAL	53	67,011	17,401	617

Sheet J

NURSERY SANITATION IN SOUTHERN APPALACHIAN STATES

1928 TO 1935 INCLUSIVE

Year	No. Nurseries Worked	No. Acres Worked	No. Ribes Destroyed	No. Infected Below
1935	17	21,601	2,180	164
1934	13	34,140	3,581	213
1933	14	2,140	4,000	477.4
1932	7	6,136	2,640	10
1931	1	534	1,300	10.5
1930	1	352	400	7.2
1929	1	414	1,589	14.4
1928	1	-	32	1
GRAND TOTAL	53	69,011	17,401	617

Chart 1

SUMMARY OF PREERADICATION SURVEYS
SOUTHERN APPALACHIAN STATES
1932 - 1935 Inclusive

Year	Acres White Pine Examined 1932 - 1935	No. Acres Mapped	No, Acres to be worked White Pine Plus Prot. Zone	No. Man-Days in Making Surveys
1935	431,750	353,352	1,040,561	2,452
1934	341,345	341,345	1,150,265	2,000 est
1933	39,279	39,279	76,407	225 est
1932	1,222	1,222	3,324	35
Totals	813,596	735,198	2,270,557	4,712

Sheet K

SUMMARY OF PARAGRAPH-AGION HIGHWAYS
SOUTHERN APPALACHIAN STATES
1932 - 1935 Inclusive

Year	Acres White Pine Examined 1932 - 1935	No. Acres Treated	No. Acres to be worked White Pine Plus Prot. Zone	No. Man-days in Making Surveys
1935	431,750	553,755	1,040,501	2,412
1934	341,345	341,345	1,150,205	2,000 est
1933	72,279	39,279	76,407	325 est
1932	1,225	1,222	3,341	47
Totals	1,145,596	935,148	2,270,534	4,784

BLACK CURRANT DISTRIBUTION
IN SOUTHERN APPALACHIAN STATES
IN 1 9 3 5

States	No. Black Currant Location Found	No. Black Currants Found	No. Locations Cleared of Black Currants	No. Black Currants Destroyed	Remarks
N. Carolina	2	6	1	3	Bushes remaining at Vale near Newland, Est. at 3
Georgia	1	27*	1	27	H. H. Green Fannin County
Total	3	33	2	30	

*These were listed as Black Currants and may have been either R. nigrum or R. americanum.

SUM OF P.W.A FEDERAL EXPENDITURES - SOUTHERN APPALACHIAN STATES
JULY 1, 1934 TO June 30, 1935

State	Federal Expenses	State Expenses
Georgia	$ 6,108.38	$ 560.00
Maryland	13,625.03	1,000.00
North Carolina	23,992.58	1,030.00
South Carolina	4,882.75	515.00
Tennessee	10,126.83	1,000.00
Virginia	32,667.54	1,010.00
West Virginia	16,373.85	609.01
	$107,776.96	$5,724.01

BLACK CURRANT DISTRIBUTION
IN SOUTHERN APPALACHIAN STATES
IN 1935

States	No. Black Currant Location Found	No. Black Currants Found	No. Locations Cleared of Black Currants	No. Black Currants Destroyed	Remarks
N. Carolina	2	6	1	3	Bushes remaining at Vale near Newland, Ext. at J. H. Green Ranch County
Georgia	1	27*	1	27	
Total	3	33	2	30	

*These were listed as Black Currants and may have been either R. nigrum or R. americanum.

SUM OF F.W.A. FEDERAL EXPENDITURES - SOUTHERN APPALACHIAN STATES
JULY 1, 1934 TO June 30, 1935

State	Federal Expenses	State Expenses
Georgia	$ 6,108.24	$ 500.00
Maryland	13,625.03	1,000.00
North Carolina	25,924.50	1,070.00
South Carolina	4,682.75	517.00
Tennessee	10,125.83	1,000.00
Virginia	32,607.41	1,010.00
West Virginia	16,372.05	500.01
	$107,446.36	$5,717.01

BLACK CURRANT DISTRIBUTION
IN SOUTHERN APPALACHIAN STATES
1916 - 1935 INCLUSIVE

State	No. Black Currants Locations Found	No. Black Currants Found	No. Locations Cleared of Black Currants	No. Black Currants Destroyed	No. of Man-Days
Delaware 1916 1932	8	210	6	199(1)	1.0
Maryland	25	2,660	7	2211(2)	
North Carolina	2	6	1	3	2.5
South Carolina	0	0	0	0	0
Tennessee	0	0	0	0	0
Virginia	24	329	1	12	.23
West Virginia	1	12	0	0	.50
Kentucky	0	0	0	0	0
Georgia 1934-1935	19	1,131(3)	18	1126	20.
Total	79	4,348	32	3551	22

Data from 1932 Annual Report So. Appalachian Region

(1) 10 bushes at Delaware Experimenting Station Nursery and 1 bush near White Clay Creek Church remaining in October 1935.
(2) Over 2,000 of these bushes were growing in nurseries and may have been distributed, instead of destroyed between 1916 - 1932. There are in addition black currants in Georges Creek Valley.
(3) Some of these bushes are probably Ribes americanum.

BLACK CURRANT DISTRIBUTION
IN SOUTHERN APPALACHIAN STATES
1916 - 1935 INCLUSIVE

State		No. Black Currants Inspections Found	No. Black Currants Found	No. Locations Cleared of Black Currants	No. Black Currants Destroyed	No. of Man-Days
Delaware	1916 1932	8	210	6	199(1)	1.0
Maryland		25	2,660	7	2211(2)	—
North Carolina		2	6	1	5	2.5
South Carolina		0	0	0	0	0
Tennessee		0	0	0	0	0
Virginia		24	29	1	12	.25
West Virginia		1	12	0	0	.50
Kentucky		0	0	0	0	0
Georgia 1934-1935		19	1,191(3)	15	1126	20.
Total		79	4,4[illegible]	35	3,[illegible]	22

Data from 1932 Annual Report to Appalachian Section

(1) 10 bushes at Delaware Experimental Station Nursery and 1 bush near White Clay Creek Church remaining in October 1935.
(2) Over 2,000 of these bushes were growing in nurseries and may have been distributed or destroyed between 1916 - 1932. Plants are in addition black currants in Sangamon River Valley.
(3) Some of these bushes are probably ribes americanum.

SUMMARY APPLIANCE STATES

Summary of 1935 Ribes Eradication by First and Second Working - Not Including Nursery Sanitation (Omitting Cultivated Ribes)

	First Working			Second Working			Totals			Percentage Worked		Ribes			Per Acre Man-Days		
	Acreage Worked 1935	No. of Ribes Destroyed in 1935	No. of Man-Days 1935	Acreage Worked 1935	No. of Ribes Destroyed 1935	No. of Man-Days 1935	Acreage Worked in 1935	No. of Ribes Destroyed	No. of Man-Days 1935	Acreage 1st	Worked 2nd	1st	2nd	3rd	1st	2nd	Total
Georgia	173,097	806,204	3,169	0	0	68	173,097	806,204	3,237	100.0	0	4.6	0	.46	.0182	0	.0182
Maryland	24,259	511,835	2,112	18,603	135,718	1,588	42,862	647,553	3,700	56.60	43.40	21.1	9.88	16.27	.0871	.0854	.0863
North Carolina	572,960	147,954	7,384	15,400	0	147	588,360	147,954	8,031	97.38	2.62	0.26	0	0.25	.0138	.0005	.0136
South Carolina	15,651	(1) 0	816	0	0	(1) 164	15,651	0	931	100.0	0	0.00	0	(1) 0.00	.0521	0	.0527
Tennessee	47,768	264,406	1,575.8	879	57,228	73.7	48,647	321,636	1,649.6	98.20	1.80	5.53	65.1	6.61	.0330	.0838	.0339
Virginia	92,327	1,227,194	13,310.5	491	87,576	356	92,818	1,314,770	13,666.5	99.47	0.53	13.29	176.56	14.16	.1441	.7250	.1472
West Virginia	37,681	402,505	3,061.6	0	0	0	37,681	402,505	3,061.6	100.0	0	10.68	0.00	10.68	.0813	0	.0813
Total	963,743	3,360,100	31,930	35,373	330,522	2,397	999,116	3,690,622	34,327	96.46	3.54	3.5	9.3	3.7	.0344	.0673	.0344

SUMMARY OF ALL RIBES ERADICATION

1919 to 1935 (Inclusive)

By First and Second Working - Excluding Nursery Sanitation, but Including Wild and Cultivated Ribes

States	White Pine Acreage Worth Protecting (3)	Control Area Acreage White Pine - Plus Protection Zone	First Working Acreage Worked	First Working Ribes Destroyed	First Working No. of Man-Days	Second Working Acreage Worked	Second Working Ribes Destroyed	Second Working No. of Man-Days	Totals Acreage Worked	Totals Ribes Destroyed	Totals No. of Man-Days	Percentage Worked Acreage 1st	Percentage Worked 2nd	Ribes 1st	Ribes 2nd	Ribes Tot.	Per Acre Man-Days 1st	Per Acre Man-Days 2nd	Per Acre Man-Days Total
Delaware	?	?	8	0	-	0	0	-	8	0	-	100.0	0	-	-	-	-	-	-
Georgia	227,025	758,827	315,310	835,366	3,677	(2) 0	659	68	315,310	836,025	3,745	100.0	0	2.65	-	2.65	.0117	-	.0119
Kentucky	26,372	61,523	61,523	3,925	837	0	0	0	61,523	3,925	837	100.0	0	0.06	0	0.06	.0136	-	.0136
Maryland	80,563	194,197	133,644	1,628,053	4,870	19,072	225,012	1,644	152,716	1,853,065	6,514	87.51	12.49	12.18	11.80	12.13	.0364	.0862	.0426
No. Carolina	532,094	1,488,372	1,185,140	357,625	11,117	15,400	4,119	147	1,200,540	361,744	11,264	98.72	1.28	0.30	0.27	0.30	.0094	.0095	.0094
So. Carolina	13,852	27,535	26,535	7,128	1,241	1,000	347	174	27,535	(4) 7,475	1,415	96.37	3.63	0.27	0.35	0.27	.0480	.1740	.0514
Tennessee	171,500	428,750	160,076	395,416	3,138	879	57,228	74	160,955	452,674	3,232	99.45	.55	2.47	65.10	2.81	.0199	.0842	.0203
Virginia	125,000	500,000	223,537	2,548,742	27,370	7,710	155,571	1,082	231,247	2,704,313	28,461	96.66	3.34	11.40	20.18	11.69	.1215	.1403	.1231
West Virginia	120,000	372,000	72,907	587,760	5,244	2,482	12,587	361	75,389	600,347	5,605	96.71	3.29	8.06	5.07	7.96	.0719	.1454	.0743
Total	1,296,406 Corrected 10/3/36	3,831,204	2,178,680 Corrected 10/3/36	6,364,015	57,553	46,543	455,523	3,550	2,225,223 Corrected 10/3/36	6,819,538	61,103	97.91	2.09	2.92	9.79	3.06	.0264	.0762	.0274

(1) Data differs from that in my Table E of 1935 Annual Report which uses old figures of 1934, found since to be incorrect.

(2) No acreage given in Georgia for 2nd working, since only house sites were reworked.

(3) This includes acreage in some States below 50 trees per acre.

SOUTHERN APPALACHIAN STATES

SUMMARY OF RIBES ERADICATION BY PROGRAMS
Including First, Second and Third Workings - Omitting (Cultivated Ribes) Excluding Nursery Sanitation

States	Total Acreage Worked First, Second and Third	Regular and Cooperative				WPA and ERA				E. C. W.				PWA or NrA				Total Emergency Programs WPA ECW PWA			
		Acreage Worked 1935	No. Ribes Destroyed (Wild)	No. of Man-Days	Percent of Tot. Worked	Acreage Worked 1935	No. Ribes Destroyed (Wild)	No.of Man-Days	Percent of Total Acreage Wkd.	Acreage Worked 1935	No. of Ribes Destroyed (Wild)	No. of Man-Days	Percent of Tot. Acreage Worked	Acreage Worked 1935	No. of Ribes Destroyed (Wild)	No. of Man-Days	Percent of Total Acreage Worked	Acreage Worked 1935	No. of Ribes Destroyed (Wild)	No.of Man-Days	Percent of Tot Acreage Worked
Georgia	173,097	-	-	-	-	124,122	802,053	2,961	71.71	0	0	0	0	48,975	4,151	276	173,097	173,097	806,204	3,237	100
Maryland	42,862	-	-	-	-	18,487	308,689	1,770	43.13	5,733	274,503	863	13.38	18,642	114,361	1,067	42,862	42,862	697,553	3,700	100
No. Carolina	588,360	-	-	-	-	241,189	138,936	6,743	40.99	0	0	0	0	347,171	9,018	1,288	588,360	588,360	147,954	8,031	100
So. Carolina	15,651	-	-	-	-	4,050	0	596	25.80	0	0	0	0	11,601	0	385	15,651	15,651	0	981	100
Tennessee	48,647	-	-	-	-	15,439	192,845	1,108	31.74	406	11,631	35.8	0.83	32,802	117,160	505.8	48,647	48,647	321,636	1,649.6	100
Virginia	92,818	-	-	-	-	41,379	143,517	3,375	44.58	19,623	859,679	8952	21.14	31,816	311,574	1,339.5	92,818	92,818	1314,770	13,666.5	100
W. Virginia	37,681	-	-	-	-	15,536	119,352	1,222.8	41.23	6,931	52,258	703.1	18.39	15,214	230,895	1,135.7	37,681	37,681	402,505	3,061.6	100
Totals	999,116	-	-	-	-	460,202	1,705,392	17,776	46.06	32,693	1,198.071	10554	3.27	506,221	787,159	5,997	50.67	999,116	3690,622	34,327	100

SUMMARY OF ALL RIBES ERADICATION - BY PROGRAMS 1918 - 1935 INCLUSIVE, EXCLUDING NURSERY SANITATION

Including Both Wild and Cultivated Bushes

States	Total Acreage Worked 1935	Regular and Cooperative Work				WPA AND NRA				ECW				PWA				Total Emergency Program			
		Acreage Worked 1918-1935	No.Ribes Destroyed 1918-1935	No. of Man-Days (1)	Percent of Tot. Acrg.Wkd.	Acreage Worked 1918-'35	No. of Ribes Destroyed	No. of Man-Days	Percent of Tot. Acres.Wkd.	Acreage Worked 1918-'35	No.Ribes Destroyed 1918-1935	No. of Man-Days	Percent of Tot. Acreage Wkd.	Acreage Worked 1918-'35	No.Ribes Destroyed 1918-1935	No.of Man-Days	Percent of Tot. Acrg.Wkd.	Acreage Worked 1918-'35	Ribes Destroyed 1918-'35	No. of Man-Days	Percent of Tot. Acrg.Wkd
	1st,2nd&3rd																				
Delaware	8	8	0	-	100	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
Georgia	315,310	0	0	0	0	124,122	810,772	2,961	39.36	15,493	235	51	4.92	175,695	25,018	733	55.72	315,310	836,025	3,745	100.00
Kentucky	61,523	0	0	0	0	0	0	0	0	0	0	0	0	61,523	3,925	837	100.0	61,523	3,925	837	100.00
Maryland	152,716	800	1	-	0. 52	18,487	309,119	1,770	12.11	5,993	350,566	1155	3.92	127,436	1193,379	3589	83.45	151,916	1853,064	6,514	99.48
No. Carolina	1200,540	0	0	0	0	241,189	210,239	6,743	20.09	54,168	629	570	4.51	905,183	150,876	3951	75.40	1200,540	361,744	11,264	100.00
So. Carolina	27,535	0	0	0	0	4,050	556	596	14.71	888	0	21	3.22	22,597	6,919	798	82.07	27,535	7,475	1,415	100.00
Tennessee	160,955	0	0	0	0	15,439	194,922	1,108	9.59	23,176	89,113	715	14.40	122,340	168,609	1438	76.01	160,955	452,644	3,261	100.00
Virginia	231,247	9626	56,374	35	4.16	41,379	145,153	3,375	17.89	55,842	1761,511	19580	24.15	124,400	741,275	5471	53.80	221,621	2647,939	28,426	95.84
W. Virginia	75,389	268	2	0	0.35	15,536	120,062	1,223	20.61	13,540	134,549	1972	17.96	40,045	345,734	2409	c61.08	75,121	600,345	5,604	99.65
Totals	2225,223	10702	56,377	35	0.48	460,202	1790,823	17,776	20.68	169,100	2336,604	24064	7.60	1585,219	2635,735	19228	71.24	2214,521	6763,161	61,068	99.52

Roy G. Pierce

10/14/36

(1) Man-Day Data not available prior to 1933

State	Total Average Worked First, Second and Third	Regular and Supplemental Average Worked 1955	Regular and Supplemental No. Days Quarter Yed (Wild)	Regular and Supplemental No. Man-Days	Percent of Tot. Worked	Percent of Tot. Man-Days Lost
Georgia	175,097	-	-	-	-	[illegible]
Maryland	42,202	-	-	-	-	[illegible]
N. Carolina	240,500	-	-	-	-	[illegible]
S. Carolina	15,621	-	-	-	-	[illegible]
Tennessee	44,447	-	-	-	-	[illegible]
Virginia	52,[illegible]	-	-	-	-	[illegible]
W. Virginia	37,[illegible]	-	-	-	-	[illegible]
Totals	[illegible],316	-	-	-	-	[illegible]

State	Total Average Worked 1955	Regular and Supplemental Average Worked 1955	Regular and Supplemental No. Days Quarter Yed (Wild)	Regular and Supplemental No. Man-Days	Percent of Tot. Worked	Percent of Tot. Man-Days Lost
Delaware	3	0	0	-	100	
Georgia	315,310	0	0	0	0	[illegible]
Kentucky	41,823	0	0	0	0	0
Maryland	144,716	100	1	-	[illegible]	[illegible]
N. Carolina	[illegible],846	0	0	0	0	[illegible]
S. Carolina	27,528	0	0	0	0	[illegible]
Tennessee	190,356	0	0	0	0	[illegible]

SOUTHERN APPALACHIAN STATES
SUMMARY OF ALL OTHER CONTROL WORK FOR 1935

States	Cultivated Black Currant Eradication				Nursery Sanitation						Preeradication Survey				Treatment Infected White Pine				
	No. Location Found in 1935	No. Locations Cleared of C.B.C.	No. C.B.C Destroyed	No. of Man-Days	No. Nurseries Worked 1935	No. Acres Worked	No. of Ribes Destroyed	No. Man-Days	No. of Nurseries Requesting Permits	No. of Nurseries Receiving Permits	No. of Acres Pine examined 1935	No. Acres Pine Mapped	No. Acres to be worked white pine and Prot. zone	Number Man Days	No. of trees Examined	No. trees treated	No. of Dead trees Removed	No. Cankers Removed	No. Man-Days
Delaware					2	20	15	0.6			57,699	57,699	173,097	300					
Georgia	1	1	27	0.25															
Maryland					8	7,838	18	6	6	6	23,501	23,501	48,874	206					
North Carolina	2	1	3	0.25							249,307	175,276	535,901	175					
South Carolina																			
Tennessee											11,592	11,592	46,108	415					
Virginia					6	13,500	1,411	28	6	6	72,512	72,512	216,000	712	14,755	1,795	277	9,296	295
West Virginia					1	333	736	114.4	1	1	17,139	12,772	20,581	644					
Totals	3	2	30	0.5	17	21,691	2,180	149	13	13	431,750	353,352	1,040,561	2,452	14,755	1,795	277	9,296	295

SUMMARY OF ALL OTHER CONTROL WORK 1918 - 1935 INCLUSIVE

State	Cultivated Black Currant Eradication				Nursery Sanitation					Preeradication Survey				Treatment Infected White Pine				
	No. Locations Found 1918-1935	No. Locations cleared C. B. C.	No. Black currants Destroyed	No. of Man-Days	Total No. Nurseries Worked 1918-1935	Diff. All Nurs. including repeaters	No. of Acres Worked 1918-1935	No. of Ribes Destroyed	Number of Man-Days Labor	No. Acres Pine Examined 1918 - 1935	No. Acres white pine mapped	No. Acres to be worked(5) pine and protective zone	No. of Man-Days Estimated	No. of trees Examined	No. of Trees Treated	No. of Dead Trees Removed	No. Cankers Removed	No. Man Days
Delaware	8	6	199(1)	1	2	3	180	15	0.8	8	8	110	0					
Georgia	19	14	1,126(3)	20	1	1	25	8	0.5	92,077	92,077	315,310 actual	521					
Kentucky	0	0	0	0	0	0	0	0	0	26,372	26,372	61,523	0					
Maryland	25	7	2,211(2)	no data	9	22	12,864	140	25.7	76,981	76,981	133,694 actual	393					
North Carolina	2	1	3	0.25	1	1	0	0	0	433,514	359,483	1,185,140 actual	350					
South Carolina	0	0	0	0	0	0	0	0	0	13,852	13,852	26,535 actual	50					
Tennessee	0	0	0	0	1	1	500	0	3	46,027	46,027	160,076 actual	796					
Virginia	24	1	12	0.25	6	17	17,400	1,821	52.1	101,517	101,517	223,537 actual	1368	14,755	1,795	277	9,296	295
West Virginia	1	0	0	0.50	2	9	5,342	15,417	534.9	23,248	18,881	72,907 actual 13,000 Tot.Wkd.	1234					
Total	79	29	3,551	22	22	53	36,311(4)	17,401	617.0	813,596	735,198	2,270,557	4712	14,755	1,795	277	9,296	295

(1) Bushes remaining 10 at Delaware Exper. Sta., and 1 at Wh. Clay Creek Church.

(2) Over 2000 of these bushes were at one time growing in nurseries, either destroyed or distributed or both.

(3) Many of these bushes, if not al, may have been P. americanum, cultivated.

(4) Error in original report.

(5) Actual acreage represents total initial acreage covered to end of 1935. Acres to be worked indicated estimated area based on acreage examined but not mapped.

State	Number of Cases Found 1971-1976	Number of Cases Reviewed	Number of Cases Overturned	Percent Cases Overturned
Alabama	3	3	0	0.0%
Alaska	1	1	0	0.0%
Arizona				
Arkansas	3	1	0	0.0%
California				
Colorado				
Connecticut				
Delaware				
District of Columbia				
Total	3	2	0	0.0%

State	Number of Cases Found 1971-1976	Number of Cases Reviewed	Number of Cases Overturned	Percent Cases Overturned
Florida	1	0	0	0.0%
Georgia	16	16	1	6.3%
Hawaii	0	0	0	
Idaho	18	1	0	0.0%
Illinois	7	1	0	0.0%
Indiana	0	0	0	
Iowa	0	0	0	
Kansas	0	0	0	

SUMMARY OF RIBES ERADICATION IN SOUTHERN APPALACHIAN STATES

From 1918 to 1935 Including Cultivated Ribes, but Excluding Nursery Sanitation

By Initial and Subsequent Workings

Year	1st Working			2nd Working			3rd Working			Total All Workings		
	Acreage Worked	Ribes Destroyed	Man-Days (1)	Acreage Worked	Ribes Destroyed	Man-Days (1)	Acreage Worked	Ribes Destroyed	Man-Days (1)	Acreage Worked	Ribes Destroyed	Man-Days (1)
1935	963,743	3,504,725	31,930	35,373	337,078	2,397	-	-	-	999,116	3,841,803	34,327
1934	1,150,265	2,264,798	21,053	7,620	89,579	1,003	-	-	-	1,139,053 (5)	2,354,377	22,056
1933	76,407	564,622	4,570	2,536	8,873 est(3)	150	-	-	-	78,943	573,495	4,720
1932	3,324	16,284	not given	600	19,993	not given	-	-	-	3,924	36,277	no data available
1928 to '31	3,773	13,586	" "	414	0 (2)	" "	-	-	-	4,187	13,586	
Totals	2,197,512	6,364,015	57,553 (4)	46,543	455,523	3,550 (4)	-	-	-	2,225,223	6,819,538	61,103

(1) Includes Labor and Supervision

(2) Included under 1st working

(3) 104 Man-Days of this estimated 150 A were reported by George Washington National Forest on 1,380 acres of reworking, 46 man-days estimated as reworking on Harrisonburg Watershed in 1933 on 880 acres.

(4) No data available prior to 1933.

(5) Acreage worked in 1934 reducted because of resurvey in 1935 of South Carolina pine areas.

SUMMARY OF ACREAGE WORKED IN RIBES ERADICATION IN THE SOUTHERN APPALACHIAN STATES

1928 TO 1935 INCLUSIVE

By Programs and Years - Excluding Nursery Sanitation

States	Regular	W. P. A.	E. C. W.	W. P. A.	Total
DELAWARE	8				8
GEORGIA					
1933		0	8,851	0	8,851
1934		0	6,642	126,720	133,362
1935		124,122	0	48,975	173,097
Total		124,122	15,493	175,695	315,310
KENTUCKY			0	61,523	61,523
MaryLAND					
1932	800	0	0	0	800
1933		0	0	1,890	1,890
1934	0	0	260	106,904	107,164
1935		18,487	5,733	18,642	42,862
Total	800	18,487	5,993	127,436	152,716
NORTH CAROLINA					
1933		0	29,570	0	29,570
1934	0	0	24,598	558,012	582,610
1935		241,189	0	347,171	588,360
Total		241,189	54,168	905,183	1200.540
SOUTH CAROLINA					
1933		0	888	0	888
1934		0	0	10, 996	10,996
1935		4,050	0	11,601	15,651
Total		4,050	888	22,597	27,535
TENNESSEE					
1933		0	10,720	0	10,720
1934		0	12,050	89,538	101,588
1935		15,439	406	32,802	48,647
666					
Total		15,439	23,176	122,340	160,955
VIRGINIA					
1928-1931	4,187	0	0	0	4,187
1932	2,848	0	0	0	2,848
1933	2,591	0	20,177	0	22,768
1934	0	0	16,042	92,584	108,626
1935	0	41,379	19,623	31,816	92,818
	9,626	41,379	55,842	124,400	231,247
WEST VIRGINIA					
1932	268	0	0	0	268
1933		0	4,256	0	4,256
1934		0	2,353	30,831	33,184
1935		15,536	6,931	15,214	37,681
Total	268	15,536	13,540	46,045	75,389
GRAND TOTALS	10,702	460,202	169,100	1,585,219	2,225,223

SUMMARY OF RIBES DESTROYED IN BLISTER RUST CONTROL IN SOUTHERN APPALACHIAN STATES
1939 to 1935 Inclusive
Excluding Nursery Sanitation - By Programs and Years

Ribes Destroyed Both Wild and Cultivated			Summary by years and Projects		
States	Regular	W. P. A.	C. C. C.	P. W. A.	Total
Delaware					0
GEORGIA					
1933		0	0	0	0
1934		0	235	12,509	12,744
1935		810,772	0	12,509	823,281
Total		810,772	235	25,018	836,025
Kentucky	0	0	0	3,925	3,925
MARYLAND					
1932	1	0	0		1
1933		0	0	187,470	187,470
1934		0	76,051	890,086	966,137
1935		309,119	274,515	115,823	699,457
Total	1	309,119	350,566	1,193,379	1,853,065
NORTH CAROLINA					
1933		0	360	0	360
1934		0	269	100,053	100,322
1935		210,239	0	50,823	261,062
Total		210,239	629	150,876	361,744
SOUTH CAROLINA					
1933		0	0	0	0
1934		0	0	2,213	2,213
1935		556	0	4,706	5,262
Total		556	0	6,919	7,475
Tennessee					
1933		0	62,872	0	62,872
1934		0	14,610	50,686	65,296
1935		194,922	11,631	117,923	324,476
Total		194,922	89,113	168,609	452,644
VIRGINIA					
1929-1931	13,586	0	0	0	13,586
1932	36,274	0	0	0	36,274
1933	6,514	0	255,531	0	262,045
1934	0	0	646,276	422,399	1,068,675
1935	0	145,153	859,704	318,876	1,323,733
Total	56,374	145,153	1,761,511	741,275	2,704,313
WEST VIRGINIA					
1932	2				2
1933			60,748		60,748
1934	0	0	21,543	113,522	135,065
1935	0	120,062	52,258	232,212	404,532
Total	2	120,062	134,549	345,734	600,347
GRAND TOTALS	56,377	1,790,823	2,336,603	2,635,735	6,819,538

SUMMARY OF MAN-DAYS LABOR TO TIPLE ERADICATION IN SOUTHERN APPALACHIAN STATES

1933 to 1935 Inclusive

By Programs, Excluding Nursery Sanitation (1)

States		Regular	C. C. C.	E. C. W.	P. W. A.	Total
DELAWARE	1932	(1)	0	0	0	
GEORGIA						
1933			0	40		40
1934			0	11	457	468
1935		0	2,961	0	276	3,237
Total			2,961	51	733	3,745
KENTUCKY	1934	0	0	0	837	837
MARYLAND						
1933		0	0		316	316
1934			0	292	2,206	2,498
1935		0	1,770	863	1,067	3,700
Total			1,770	1,155	3,589	6,514
NORTH CAROLINA						
1933			0	415	0	415
1934			0	155	2,663	2,818
1935		0	6,743	0	1,288	8,031
Total			6,743	570	3,951	11,264
South Carolina						
1933			0	21	0	21
1934			0	0	413	413
1935		0	596	0	385	981
Total			596	21	798	1415
TENNESSEE						
1933			0	382	0	382
1934			0	297	933	1230
1935		0	1,108	35.8	505.8	1649.6
Total			1,108	714.8	1438.8	3261.6
VIRGINIA						
1933		35	0	2,976	0	2,911
1934			0	7,752	4,132	11,884
1935		0	3,375	8,952	1,339.5	13,666.5
Total		35	3,375	19,580	5,471.5	28,461.5
WEST VIRGINIA						
1933		0	0	635		635
1934				634	1,274	1,908
1935		0	1,222.8	703.1	1,135.7	3,061.6
Total			1,222.8	1,972.1	2,409.7	5,604.6
GRAND TOTAL		35	1,776	24,064		61103.

(1) No data available on Man-Days prior to 1933.

Roy C. Pierce

10/14/36

Report of

BLISTER RUST CONTROL IN THE NORTH CENTRAL REGION, 1938

By

H. E. PUTNAM
Pathologist

and

F. F. FRANKLIN
Assistant Forest Pathologist

BLISTER RUST CONTROL, NORTH CENTRAL REGION, 1935

Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

Report Blister Rust Control Activities, North Central States

Calendar Year 1935

The expanded blister rust control program started in the latter half of 1934 was continued during 1935 and 1936 under the various ECW programs. Work done under the ERA program ceased on June 30, 1935. With the inception of work under the ECW program very little control work was done during the month of July and early part of August. In August control work was started on a large scale under funds provided through the Emergency Relief Act of 1935 to 1937, commonly known as ERA.

During the eradication season of 1935 a total of 29,112,715 ribes bushes were removed from 453,677 acres to give protection to 124,160 acres of white pine and 300 acres of white pine planting sites. These figures are for both initial and second eradications. However, nearly all of the work was initial eradication. During 1934, 600,320 acres of land were cleared of ribes, slightly more than the 453,677 acres worked in 1935. This reduction of 16,343 acres was chiefly brought about by the fact that with the exception of the ECW programs control work was at a stand still during July and the first part of August, the heart of the ribes eradication field season.

In addition to local control work accomplished in 1935, great impetus was given to the systematic removal of cultivated black currant bushes. In Michigan the initial removal of cultivated black currants was nearly completed in the state and substantial accomplishments in initial cultivated black currant eradication were brought about in Wisconsin, Minnesota, Iowa and Ohio. In the five states 416,984 inspections for cultivated black currants were made. A total of 4,141 infected locations containing 48,188 bushes were found and 40,218 bushes in 4,910 locations were destroyed.

Agencies Performing Control Work

In 1935 the blister rust control program was carried on in each state through the various agencies described as follows:

State Contributions

This item refers to the time and effort contributed by the various state cooperators, contributed office space, stenographic services, supplies, storage, etc.

State Allotment

This includes actual cash contributed toward the work either by means of an allotment or direct appropriation. In Michigan and Minnesota there were direct appropriations as well as cash allotments. In Wisconsin funds were allotted from other state appropriations for blister rust control

These funds were spent in some cases for the employment of labor and in others for the employment of temporary field supervisors, or for travel expenses of agents.

Private Cooperation

This includes time or money furnished by private owners under the supervision of blister rust foremen for the protection of their pine stands or nurseries.

Regular Funds

From July 1, 1936 to December 30, 1938 regular funds were available for the employment of the supervisory personnel in the Milwaukee office and for the state leaders in Wisconsin, Minnesota, Ohio and Iowa and two district agents in Michigan.

FS-ERA

From January 1, 1935 to June 30, 1936 funds were made available to pay the salaries and expenses of the supervisory forces as well as for the employment of labor in local control. However, only a very small proportion of these funds was spent for actual labor. Instead this money was used primarily for the employment of foremen to supervise control operations performed under the FERA or other relief programs.

FERA

Federal Emergency Relief Administration funds were used for labor on various projects in Michigan and Wisconsin supervised by foremen employed on FS funds. In these two states FERA men were used in cultivated ribes current survey work and eradication and in local control. In general, the use of men on relief in blister rust control work proved very satisfactory. Its success was, of course, primarily dependent upon the character of the foremen employed on FS funds supervising the work. In all cases excellent cooperation was received from the county relief authorities making available this type of labor for control work.

Transient Relief

A limited amount of blister rust control work was performed using transient relief labor in Minnesota and in Ohio. Transient relief camps were composed of single or unattached men and were given both their lodging and a small amount of wages, approximately $1.50 per week for their services. The personnel of these camps varied greatly from day to day. Many men would remain only for a few days at a camp and then travel on. As a consequence it was not possible to have a crew made up of the same individuals for very long periods and unsatisfactory control work resulted.

Technician ECW

In 1933 and 1934, three men were employed as blister rust technicians on the ECW payroll. They continued to give supervision to control work on federal lands under the direction of the state leader concerned. One man each was assigned to work on federal lands in Wisconsin, Michigan and Minnesota. During the winter these three men reported to the Milwaukee office, worked up their reports and made plans for the coming field season.

State ECW

A large program of local control and nursery sanitation was performed under the State ECW in Michigan, Wisconsin, Minnesota and Ohio. This work was immediately supervised by ECW foremen in camps — each foreman supervising approximately 25 CCC employees. The State ECW also was responsible for making pre-eradication surveys within the working radii of the camps. The completed Ribes eradication work was checked by an ECW checker who also gave technical direction to the work in an assigned district, usually containing three to five CCC camps. All of this control work was under the technical supervision of the state leader. This method of performing local control was highly successful.

Forest Service ECW

The same general method as described under the State ECW was in operation in the Forest Service ECW camps and was very successful.

Parks ECW

Local control work was performed under this program as described above with the exception that no checkers were authorized and the work of checking had to be done by others in the central organization. Good work was done under this program.

Indian Service ECW

Excellent local control work under the Indian ECW program was performed in Minnesota and in Wisconsin. In Minnesota, the supervision as well as labor was paid from Indian Service ECW funds under the general supervision of the blister rust control organization. In Wisconsin, on the Lac Courte Oreilles and Lac du Flambeau Reservations the Indian ECW furnished the labor and supervision was carried by our own Bire funds up to June 30. This arrangement was due to the mixed ownership of land on these reservations and the work was thus on a cooperative basis. After July 1 when Bire funds were no longer available the supervision as well as the labor for work on all reservations in Wisconsin were paid from Indian Service ECW funds.

NYA

Under the National Youth Administration a few students were employed in the fall in Ohio in master cultivated black currant surveys within operating distances of their respective colleges. This work was under the direct supervision of the state leader and good work was accomplished.

Under the emergency relief appropriation act of 1935 three emergency work relief labor was released on a greatly enlarged scale in early August. Under date of July 31, 1935, the following amounts became available to each state:

State	Original Proj. No.	Project Assn. Admin No.	Work Projects No.	Amount
Iowa	OP-3-141	8 EQ	FPC 8	$81,157.00
Michigan	OP-3-146	10 EQ	FPC 10	[illegible]
Minnesota	OP-3-148	11 EQ	FPC 11	176,066.00
Ohio	OP-3-032	17 EQ	FPC 17	11,136.00
Wisconsin	OP-3-122	27 EQ	FPC 27	[illegible]
			Total	[illegible]

Of the allotment for Michigan, $85,570 was for the use of the regional office at Milwaukee.

The Chief of the Division of Plant Disease Control was named administrator of these projects and the Regional Supervisor at Milwaukee was appointed Project Manager. Budgets were prepared dividing up each state allotment into sub-allotments such as salaries for appointees, salaries non-relief, salaries relief, travel, supplies and miscellaneous. At least 40% of all man months of employment were required to be from relief rolls. These funds were used for the employment of district leaders, local supervisors, foremen and labor in accordance with established regulations covering this act to perform local control, primary eradication, pre-eradication survey, cultivated host survey eradication and other activities pertaining to the control program.

Organization

The control program of 1935 was administered under the same general organization as prevailed in 1934; viz., the Regional supervisor at Milwaukee and state leaders, one each in Michigan, Minnesota, Iowa and Ohio. With the exception of Michigan where the state leader was employed on state funds, the other four state leaders were assigned on regular funds. The work was done in each state under the administrative supervision of and in close cooperation with the state cooperator as in the past.

Similar to previous years Michigan was divided into two districts, viz., Upper and Lower Michigan, with a district leader in charge of each, with headquarters at Grayling and Jackson, respectively. In Minnesota there were two districts — the northeastern district with headquarters at Duluth and the northwestern district with headquarters at Hopkins. In Minnesota there were three districts; viz., the southern district with headquarters at St. Paul, the northeastern district with headquarters at Tower, and the northwestern district with headquarters at Detroit. Iowa and Ohio were not divided into districts.

In Table I there is listed the positions in the control program with a brief description of the duties and responsibilities.

Table 1 .- The Bilharzia Snail Control Organization, North Central States Region, 1970.

Position	Paid From	Duties
State Leader	ARA - Reg. - State*	In full charge of all phases of the State Control Program. Full time.
District Agents	ARA - Reg. - SPA	Each agent in charge of a group of counties directing pre-eradication surveys, contacts and control work. Responsible to the state leader.
Supervisors	ARA - SPA - State	One or more supervisors helping District Agent direct relief labor in pre-eradication surveys, CBC elimination and local control.
Technicians	L.S. - SCW	In direct charge of contacts, pre-eradication surveys and all control work on national forests. Responsible directly to state leader.
Manager	L.S. - SCW	Directly responsible to state leader for all control work on an Indian Reservation. Usually assisted by a sapper and checker.
Checker	State-SCT - PS-SCS	State leader's representative in charge of contacts, pre-eradication surveys and all other control work out of a geographical group of SCT Dangers.
Technical Foreman	SCT Programs	Technical Foreman sapper crew, which work for and assist the checker in all control work performed out of SCT Dangers.
Professional Laborers	SPA	In Ohio to charge CBC work and local control, using SPA funds in a given county - responsible to state leader. In Michigan assisted the agents in SPA work.
Skilled Laborers	Relief Programs (SPA - CTRA - VRA)	Help charge of one or more control crews, help supervisor in directing pre-eradication surveys, CBC elimination programs, checking work and availability of pertinent records.
Intermediate Laborers	Relief Programs (SPA - CTRA - VRA - WCW)	Serve as crew-bosses working behind local control agents, assisting pre-eradication surveys, and assisting skilled laborers and supervisors wherever possible.
Unskilled Laborers	SPA - CTRA - VRA - WCW	The men who actually accomplish local control results by pulling snail baskets, mash vats and cultivated soil on several small lots in each of the eligible local control areas.

* Federal and Cooperator paid from state funds.

Table 8 - - Range of [illegible] Wages Paid for Different Classes of Employees, Different Work Projects, March General Survey, 1935

State	Position	Regular	State Funds	Private Coop.	[illegible]	F.E.R.A.	Tech. [illegible]	F.E. [illegible]	I.S. [illegible]	Parks [illegible]	State [illegible]	[illegible]	[illegible]
Michigan	District Agents	$2,000 to 2,600 Y			$1,000 to 1,500 Y								
	Supervisors or Checkers				150 to 185 M		$2,000 Y	$2,000 Y			$1,500 to 1,800 Y	$125 to 100 M	
	Foreman		$ 110 M		125 to 150 M			$150 to 167 M		$120 to 150 M	140 to 150 M		150 M
	Labor - Skilled				0.60 H								85 M
	Intermediate												65 M
	Unskilled			$0.30 H	0.60 H	$0.35 to 0.45 H		$1.50 D		$1.00 D	$1.00 D		50 M
Wisconsin	State Leader	$2,400 to 3,200 Y			$2,400 Y								
	District Agents				1,200 Y							$2,000 to 2,500 Y	
	Supervisors or Checkers				150 M		$2,000 Y	$167 M	$137 M		$167 M	135 to	150 M
	Foreman		$ 130 M		100 M			150 M	135 M		140 M		150 M
	Labor - Prof.												97 M
	Skilled				0.60 H	$0.50 to 0.62 H							70 M
	Intermediate												55 M
	Unskilled			$0.30 H	0.50 D	0.30 to 0.55 H		1.50 D	1.10 D		1.50 D		45 M
Minnesota	State Leader	$2,000 to 3,200 Y			$2,000 Y								
	District Agents		$1,300 Y		1,500 Y							$1,600 to 2,600 Y	
	Supervisors or Checkers				135 M		$2,000 Y	$167 M	$150 to 175 M		$167 M		135 M
	Foreman				110 to 130 M	(A)$50 M		150 M	130 M		$140 to 150 M		130 M
	Labor - Skilled												85 M
	Intermediate												65 M
	Unskilled			$0.30 H	0.60 H	(A) 0.30 D		1.00 D	0.10 D		2.00 D		50 M
Iowa	State Leader	$2,400 to 2,600 Y			$2,400 Y								
	Supervisors											$ 135 M	
	Foreman				140 M								
	Labor - Skilled												70 M
	Intermediate												50 M
	Unskilled			$0.30 H	0.50 H								40 M
Illinois	Foreman									$167 M			
	Labor - Unskilled			$0.30 H						1.50 D			
Ohio	State Leader	$2,000 to 2,600 Y			$2,000 Y								
	Foreman				102 to 120 M						$150 M		
	Labor - Prof.											$ 94 M	
	Skilled											93 M	
	Intermediate											65 M	$1.50 D
	Unskilled			$0.30 H		$0.30 to 0.50 H					1.50 D	55 M	

(A) - Transient Relief labor $1.50 per week Foreman $50.00 per month. Legend for Rates: H - Hourly; D - Daily; M - Monthly; Y - Yearly.

of each position.

In Table 2 there is shown a range of gross wages paid in each state for the different positions as listed. Reference should be made to this table in considering costs in the Ribes eradication and other tables.

Number of Persons Employed by Programs

In Table 3 is shown the approximate number of men employed in the region exclusive of the Milwaukee office by months, positions and programs. Note that the month of September was the peak month in the employment of men. This was the peak month for employment of men as the WPA program and the ECW programs were still employing a large number of men on local control. During September 1,773 persons were working under the WPA program and nearly this same number was maintained during October. In November and December the number employed under the WPA program totaled to 785 and 478, respectively. Local control was performed much later in the season than ordinarily under the WPA program because of the desirability of employing as many reliefers as could be effectively used and supervised. It was understood that in late fall Ribes eradication there would not be the reduction in Ribes feet of live stem as would obtain earlier in the season when Ribes leaves were still present. However, it is planned to recheck in the spring of 1938 areas eradicated of Ribes late in the fall. During November and December the WPA workers were engaged principally in cultivated black currant eradication and in making pre-eradication surveys.

In Table 4 there is shown the approximate number of persons employed in the Milwaukee office during 1935. The office force was greatly increased beginning in August to take care of the increased amount of work in connection with the preparation of payrolls and other vouchers to be paid direct from the Treasury Accounts Office at Madison instead of going to Washington as formerly. Under the WPA program an added agent was employed to work out of the Milwaukee office. A clerk-stenographer formerly employed on blister rust control under the ECW program, was transferred to the WPA rolls, one non-relief security wage earner was employed as a bookkeeper and five stenographers were employed from the relief rolls.

In Table 5 there is shown the approximate number of man months of supervision and labor by states exclusive of the Milwaukee office. Note that 6.2% of the total man months in the region are classified under supervision and 93.8% under labor. Supervision as used in this table consisted of those individuals under appointment. All security wage earners, CCC laborers and other laborers were classified as labor. In Iowa and Ohio the proportion of supervision to labor is higher than in the other states. The reason for this is that the pine areas in these two states are small and scattered quite widely. In Iowa, in particular, the chief problem concerned the protection of white pine shelterbelts. Because of this fact the eradication crews were widely scattered requiring a higher proportion of supervision to labor to insure good work than in other states where pine areas were larger and closer together, requiring a much larger number of laborers at one locality doing the work.

In Table 6 the number of man months of labor and supervision in

[illegible]

Table 4. - Approximate number of men employed on Eliston Rust Control Activities in Milwaukee Office, 1935.

Program	Position	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Approx. No. Man Months
Regular	Supervisor							1	1	1	1	1	1	6
	Asst. Supervisor							1	1	1	1	1	1	6
	Senior Clerk							1	1	1	1	1	1	6
	Clerk-Typist								1	1				1
N.Y.A.	Supervisor	1	1	1	1	1	1							6
	Asst. Supervisor	1	1	1	1	1	1							6
	Senior Clerk				1	1	1							3
	Clerk-Typist													[illegible]
T.A.-E.C.W.	Clerk Stenographer		1	1	1		1	1	1	1	1			[illegible]
W.P.A.	Agent									1	1	1	1	4
	Clerk Stenographer											1	1	2
	Labor-Non-Relief-Clerk										1	1	1	3
	Labor-Relief-Clerk								3	4	8	8	8	32
	Clerk-Typist									1	1	2	[illegible]	[illegible]
	Total Field	[illegible]	1	1	[illegible]	1	1	[illegible]	7	7	11	11	11	[illegible]
All Programs	Apiarist-Supervisor	1	1	1	1	1	1	1	1	1	1	1	1	12
	Assistants	1	1	1	1	1	1	1	1	2	2	2	2	18
	Clerks	1	1	1	2	2	3	2	3	3	5	5	7	31
	Lower-Skilled Clerks								3	4	8	8	8	32
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9	16	[illegible]	[illegible]	[illegible]

Table 3. - Approximate Number of Man Months of Supervision and Labor in Shares, North Central Region, Including the Extension Office, 1969

State	Number of Man Months			% Man Months in Each State Spent in		% Total Man Months in Each State
	Supervision	Labor	Total	Supervision	Labor	
Michigan	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Minnesota	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Montana	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ohio	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Illinois	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ohio	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

the North Central Region exclusive of the Milwaukee office is shown by programs. As would be expected, 100% of regular funds and 100 of the NYA funds were devoted to supervision. Note that only 2.2% of the WPA funds were classified as supervision and 97.8% were labor. All of the FERA funds and NYA funds were spent on labor. Note that 88.1% of the total man months were used on the WPA program while 11.9% were spent on the various SCS programs.

Security Wage Earners

In Tables 7, 8 and 9 are shown data relative to the number of security wage earners employed on blister rust control projects with special reference to the average age and number of dependents.

Reference is made to Table 7. Note that there were employed in the North Central Region including the Milwaukee office a total of 2,403 security wage earners of which 39 were non-relief and 2,364 were reliefers. Note that the average number of dependents of each reliefer including the wage earner himself was 4.7 and of each non-reliefer 2.3. In other words, the average number of dependents for each reliefer was slightly more than double that for each non-reliefer. The largest average number of dependents per security wage earner in any of the states was in Iowa, 5.2 dependents. A total of 11,198 individuals was given help for varying lengths of time by the blister rust control program in this region.

Reference is made to Table 8 showing the age classes of reliefers employed on blister rust control work in this region. Note that the average age of reliefer varied from 34 years in Ohio to 51 in Iowa. The youngest person employed was 17 years and the oldest was 79 years working in Wisconsin. Of the total number employed 2.5% were 50 years or older.

Reference is made to Table 9 where the number of reliefers has been classified according to the number of dependents and the age class of the reliefer. Note that the men in the age class from 34 to 55 uniformly supported an average number of dependents of five or more persons. After the age of 55 the number of dependents per man decreased quite markedly. However, before the age of 34 the number of dependents was still high, varying narrowly between 3.8 and 4.8 per worker.

Note that the average age of those individuals having no dependents other than themselves was 38 years. The average age of those having one other person besides themselves as dependents was 37. For some reason not understood the average age of those individuals having two additional dependents was only 32. With minor variations the average age generally increased for those individuals having 4 to 15 dependents from 33 to 43 years. The average man employed on the blister rust control projects in the region was 36 years old and had 4.7 individuals dependent upon him including himself.

Spread of the Rust

During the course of the field work many new pine infection centers in the region were discovered indicating a greater intensification of the rust. Large numbers of incipient cankers were found giving further evidence of intensification of the disease. In several localities, notably in Wisconsin, Minnesota and Upper and Lower Michigan pine infection was found quite generally distributed in counties from which only one or a few pine infection centers had

Table 3. - Age Classes of Railifers Employed on Sliding [illegible] Aug. 1, 1955 to Feb. 28, 1956. North Central Region

Age Class Years	Number of Railifers: Michigan	Wisconsin Including Milwaukee	Minnesota	Iowa	Ohio	Total Region	% of Total Men in Each Age Class
16-17	2	2	-	-	-	4	0.2
18-19	11	18	7	1	4	41	1.7
20-21	33	37	14	2	3	91	3.7
22-23	43	53	25	3	6	130	5.3
24-25	54	64	34	8	4	164	6.6
26-27	53	77	39	8	6	191	7.7
28-29	61	72	39	8	11	191	7.7
30-31	45	72	17	9	7	150	6.0
32-33	47	63	33	8	6	161	6.5
34-35	52	54	31	11	1	150	6.0
36-37	44	65	30	4	3	146	5.9
38-39	42	56	21	6	11	136	5.5
40-41	40	66	28	9	5	147	5.9
42-43	34	55	29	8	4	130	5.2
44-45	36	54	17	8	7	122	4.9
46-47	37	39	18	4	3	101	4.1
48-49	18	32	10	6	5	71	2.9
50-51	20	39	4	1	5	69	2.8
52-53	26	27	14	4	1	72	2.9
54-55	10	17	11	2	4	44	1.8
56-57	7	11	1	2	2	23	0.9
58-59	4	11	6	-	-	21	0.8
60-61	1	9	2	1	-	13	0.5
62-63	2	11	1	1	-	15	0.6
64-65	1	8	1	-	-	10	0.4
66-67	-	7	-	1	-	8	0.3
68-69	1	5	-	1	-	7	0.3
70-71	-	5	-	-	-	5	0.2
72-73	-	3	-	1	-	4	0.2
Over-73	-	1	-	-	-	1	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Ave. Age	35	37	36	38	36	36	100.0
Youngest	17	17	16	17	18	16	
Oldest	69	72	68	65	67	72	

Table 9 - - Number of Relieves on Tissler Rust Control Project, North Central Region, Inclusive of Milwaukee Office, Classified by Age Class and Number of Dependents Class (Including Page Survey) Aug. 1, 1935 to Feb. 29, 1936

Age Class Years	Number of Dependents Including Page Survey Classes 1	2	3	4	5	6	7	8	9	10	11	12	13	Total Number Relief-ees	Total Number Depend-ents	Ave. No. Depend-ents per Relief-ee
19		2			1				1					4	18	[illegible]
16-19	3	5	11	8	2	2	2	1	2	2		1		43	184	[illegible]
20-21	7	9	27	20	15	6	2		2	1				90	340	[illegible]
22-25	1	11	30	29	13	6	6	3	3					141	510	[illegible]
26-29	5	14	30	29	19	8	5	2	2					124	539	[illegible]
30-34	4	15	47	61	30	16	7	1						192	776	[illegible]
35-39	5	16	40	52	27	25	11	2					1	180	764	[illegible]
40-44	6	15	34	41	27	15	11		1		2			150	[illegible]	[illegible]
45-49	3	10	18	44	32	28	10	7	2	1	1			143	[illegible]	[illegible]
50-54	4	6	25	23	26	22	17	2	5	2		1		132	[illegible]	[illegible]
55-59	1	9	17	25	20	21	10	12	3	2	1	2		136	743	[illegible]
60-64	1	5	16	38	26	18	12	6	7	4		1	1	136	714	[illegible]
65-69	1	14	16	23	18	17	15	10	9	2	2	2	2	135	750	[illegible]
70-74	2	7	18	24	23	19	11	10	7	2	2	1		130	693	[illegible]
75-79	2	4	11	9	26	26	14	12	5	2	1	1		113	691	[illegible]
80-84	2	10	11	9	13	24	5	5	4	3	2			90	451	[illegible]
85-89	2	6	10	14	12	9	2	2	4	3	1	2		71	393	[illegible]
90-94	4	7	10	15	9	5	5	7	2	2			1	69	347	[illegible]
95-99	4	10	10	8	13	10	9	6	-	2			1	74	372	[illegible]
100-104	2	5	7	4	7	3	10	2	2	1				44	223	[illegible]
105-109	2	1	2	3	7	1	1	1	2					22	107	[illegible]
110-114	1	6	5	5	4	2		1	2					26	107	[illegible]
115-119	1	3	4	3	2									13	[illegible]	[illegible]
120-124	1	4	2	6		1	1							15	[illegible]	[illegible]
125-129	1	2	2	3		2		1						11	30	[illegible]
130-134		2	3	1		1								7	[illegible]	[illegible]
135-139	1	3	1											5	10	[illegible]
140-144	1	1												2	2	[illegible]
145-149		1	1			1								3	12	[illegible]
150-154																
155-159																
160		1												1		
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ave. Age	39	37	39	38	37	38	39	44	39	43	41	40	46	36		

previously been known.

Michigan

In Michigan a large number of Ribes were found infected in counties known to be infected prior to 1935. In Allegan County, Lower Peninsula, infection was found on cultivated black currants in 1935 reported for the first time. Pine infection was reported for the first time in four new counties in Michigan; viz., Delta in the Upper Peninsula and Benzie, Newaygo and Montcalm in the Lower Peninsula. The pine infections found in Lower Michigan are especially interesting because previously, although intensive scouting for the rust had been done, pine infection in Lower Michigan was difficult to find. The cankers in the three counties listed in Lower Michigan were for the most part in the younger stages of development.

Wisconsin

In Wisconsin in addition to finding several intensification of the rust on Ribes and pines in counties where infection had been found previously Ribes infection was found for the first time in Iron, Outagamie and Washburn Counties and pine infection in Rusk County.

In Portage County, Wisconsin (Sam Hope Area) a very heavy pine infection was located. Thousands of incipient cankers were noted in a stand containing many young white pine trees. A summary of this pine infection also may be found in the latter part of this report.

Minnesota

In Minnesota no newly infected counties were found although new pine and Ribes infection in counties previously known to be infected were located.

Iowa

No infection on either Ribes or pines was noted in 1935.

Illinois

In the fall of 1935 Mr. J. W. Gerliss of the Division of Domestic Plant Quarantines found cultivated black currant bushes infected in the town of Warren, Joe Davis County, in the northwestern corner of the state. This is the first blister rust infection ever found on native hosts in the state.

Indiana

During the course of a scouting trip by Mr. W. S. Shaals of the Domestic Plant Quarantines and Mr. S. T. Franklin of the Milwaukee Regional Office, Ribes infection was found at two places in two counties in northern Indiana. Ribes americanum was found infected eight miles west of Howe in La Grange County and R. cynosbati was found infected near Hudson Lake in La Porte County. This is the first positive finding of white pine blister rust on native hosts in Indiana.

Ohio

A canker positively identified as blister rust was found in the arboretum at Wooster which adds Wayne County to the list of pine infected counties in Ohio. Heavy infection was reported on cultivated black currant bushes in Trumbull, Portage and Summit Counties, Ohio, for the first time in 1935.

Acreage of White Pine

In Table 10 is shown the best estimates of acreage of white pine in the North Central Region by states. These acreage figures are somewhat different from those reported previously and are presumably more accurate because of the increased amount of work done in 1935 in making pre-eradication surveys and scouting for white pine areas.

Pre-eradication Surveys

During the winter, spring and fall of 1935 pre-eradication surveys in this region were conducted under the various ECW programs and on EAA funds. In the fall of 1935 additional pre-eradication surveys were made using WPA labor. The results of these surveys are shown in Table 11. Note that pre-eradication surveys were made on 239,943 acres of white pine requiring the removal of Ribes from 794,897 acres.

Local Control

Although the acreage worked in 1935 did not equal that of 1934 due chiefly to the lack of funds to employ labor during July and part of August, nevertheless, a creditable showing was made in local control. In Tables 11, 13 and 14 are shown the summary of initial control work, second eradication and total control work performed in 1935 in the various states classified by the programs furnishing labor.

In Table 15 the results of local control are summarized for the entire region by programs. Note that in spite of the late start a total of 215,456 acres were worked by labor furnished through the WPA. Approximately 40% of the 1935 worked area was covered and 46% of the man days of labor was supplied by the WPA program.

In Tables 16 and 17 are shown the status of initial control work and second eradication, respectively, in this region. Note in Table 16 that 34.2% of the white pine worthy of protection in this region has been given initial protection at the end of the 1935 field season. While only 1.6% of pine acreage has been given second eradication, there is still a long way to go before the white pine in this region classified by forestry interests as worth protection will be given initial protection and the work of giving this pine acreage second and third eradications is scarcely begun.

Nursery Sanitation

Nursery sanitation was performed around 32 nurseries in the region as shown in Table 18. A large expansion in the general nursery program in this region was brought about by a greatly expanded forestry planting program. Correspondingly an expansion in the nursery sanitation program resulted. Of the 32 nurseries given nursery sanitation in 1935, 18 were privately owned, 11 were state owned, 7 were owned by the U. S. Forest Service and one by the U. S.

Table 10. - Acreage of [illegible] Pine in North Central Region, Estimated as of December 31, [illegible]

State	(1) 1st. Priority Pine	(2) 2nd. Priority Pine	Sub-Total Pine to Restock	Scattered Pine
Michigan	778,[illegible]	269,388	345,818	151,614
Minnesota	387,000 a	127,050 b	[illegible],050	760,000
Wisconsin	[illegible],000	305,577	367,616	126,481
Iowa	2,000 c	7,000 d	5,000	
Illinois	1,200		1,800	600
Indiana	1,000		1,000	600
Ohio	12,800 e		13,000	3,315
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(1) Meeting minimum forestry requirements, 400 per acre 6' tall or less, 300 per acre [illegible] tall; [illegible] 20 acres or more each. For practical purposes these [illegible] requirements do not apply.

(2) Meeting 1/4 requirements of 1st. priority pine. [illegible] 20 acres or more in extent. For practical purposes these requirements do not apply.

a [illegible] to be subtracted.

b Second priority pine not listed [illegible] and not shown in totals. In addition there are estimated 700,000 acres of scattered white pine in Minnesota.

c [illegible]

d [illegible]

e [illegible]

Table 11. - Acres of White Pine Covered by Pre-eradication Surveys by States and Programs, North Central Region, 1935.

State	Programs												Totals	
	TC-SCS Acres		White-PCC Acres		TC-CCC Acres		VPA Acres		FSA Acres		State Acres		Acres White Pine	Acres TC TC Project
	Pine	To Work	Pine	To Work	Pine	To Work	Pine	To Work	Pine	To Work	Pine	To Work		
Michigan	3,767	19,937	77,770	173,570			57,024	171,447	20,817	77,184	3,970	17,171	146,199	454,[illegible]
Wisconsin	2,080	9,080	67,282	111,864	17,[illegible]	32,065			8,603	26,409			86,476	[b]199,[illegible]
Minnesota	1,096	8,546					[a]85,641	136,659					86,723	139,[illegible]
Iowa							171	[c]1,027					171	1,027
Ohio									75	6,525			75	6,[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17,171	[illegible]	[illegible]

a - Including limited work done by CCC and State.
b - Acreage estimated.
c - Draw work only.

Table 114. - Data on Pre-Suppressing Surveys - 1915 and 1919-1925 (inc.)
[illegible] Region

State	Date	Acres White Pine	Acres White Pine Protective Zone	Cost of Survey	Man-Days Used
All	1915	250,645	754,387	139,[illegible]	[illegible]
Mich.	1921	111,[illegible]	351,[illegible]	10,[illegible]	4,[illegible]
Wisc.	"	103,177	310,000(a)	27,[illegible]	9,[illegible]
Minn.	"	11,797	43,874	6,304.20	1,[illegible]
Iowa	"	[illegible]	180,990	5,[illegible]	1,115
Indiana	"	16	160	123.00	30(b)
Ohio	"	5,110	[illegible]	2,404.41	440 (c)
Mich.	1922	57,[illegible]	160,527	7,155.60	2,040
Wisc.	"	16,[illegible]	87,651	6,108.71	3,[illegible]
Minn.	"	37,[illegible]	165,002	15,247.11	4,[illegible]
Iowa	"	70	147,970	2,775.45	470
Illinois	"	787	2,005	375.42	70 (d)
Indiana	"	509	2,733	586.25	70 (d)
Ohio	"	3,[illegible]	4,[illegible]	1,270.77	150 (d)
Mich. 1924-1925 inc.		24,[illegible]	57,[illegible]	83.47	9
Minn. "	"	-	-	-	-
Wisc.	"	2,381	84,700	470.04	345
All 1919-1925 inc.		[illegible]	1,[illegible]	137,477.38	64,963

It is interested that at least 5,000,000 acres of land has been examined in connection with mapping the acres of white pine and protective types shown in the table.

(a)Estimated on basis of 75 % the cost of each man-day from actual rates.
(b)Estimated on basis of [illegible] per man-day from actual cost.
(c)Estimated on basis of $4.00 per man-day from actual cost.
(d)Estimated on basis of $6.00 per man-day from actual costs.

[illegible]

[illegible] Crop Year, by Crop and Province,
Sask. Crop Insur. 1983.

Crop	Acres Insr. F.P.	Acres Insr. S.P.	Acres Seded (1) Crop	Acres Seded (2) Crop	Acres Seded Total	Crop Value	Value Insured (%)
[illegible]	1,644		872	4,051	4,880	874,910	[illegible]
[illegible]	44,815		24,340	70,063	94,751	7,989,881	[illegible]
[illegible]	797		1,169	1,481	2,619	190,078	[illegible]
[illegible]	23,816		42,724	21,763	64,479	5,403,025	[illegible]
[illegible]	1,080		2,102	972	3,074	440,198	[illegible]
[illegible]	177		429	700	1,129	180,248	[illegible]
[illegible]	2		10	60	70	870	
[illegible]	2,498		-	1,400	2,400	-	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	5,995	285	2,805	7,600	10,405	924,982	[illegible]
[illegible]	7,348		6,995	863	7,858	1,098,110	[illegible]
[illegible]	47,824	38	47,234	11,408	57,084	5,447,747	[illegible]
[illegible]	14,300	30	19,725	46,549	66,989	9,540,289	[illegible]
[illegible]	1,348		2,182	7,074	7,092	297,182	[illegible]
[illegible]	861		280	1,860	2,140	160,758	[illegible]
[illegible]	838	[illegible]	80	1,278	1,358	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	7,345		6,977	1,368	13,689	1,394,628	[illegible]
[illegible]	2,009		1,027	896	1,923	1,086,798	[illegible]
[illegible]	4,901		3,868.5	4,108	8,116.0	697,047	[illegible]
[illegible]	16,880		17,168	31,115	53,798	3,860,[illegible]	[illegible]
[illegible]	65		54	128	438	3,[illegible]	[illegible]
[illegible]	880		275	538	540	44,[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	58		7,658	27,302	30,187	41,[illegible]	[illegible]
[illegible]	43		238	6,338	6,577	3,[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	363		1,088	1,368	2,451	35,808	[illegible]
[illegible]	860		1,897.5	1,096	2,989.5	283,700	[illegible]
[illegible]	138		843	-	843	7,068	[illegible]
[illegible]	-		10	-	10	240	[illegible]
[illegible]	3.5		145	385	880	8,110	[illegible]
[illegible]	-		-	-	-	-	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	480,[illegible]	[illegible]	[illegible]

Crop	Pro-Rate Total	Pro-Rate Labor Hours	Pro-Rate Mach.	Pro-Rate Total	Total Labor	Total Mach.	Total Supplies and Transport.	Total Costs	Total Loss Ratio	Costs	[illegible]
[illegible]	190,[illegible]	2,[illegible]	180.[illegible]	2,[illegible]	1,[illegible]	1,[illegible]	160.[illegible]	3,[illegible]	0.46	[illegible]	[illegible]
[illegible]	1,[illegible]	30,[illegible]	1,[illegible]	31,[illegible]	30,[illegible]	8,[illegible]	1,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	195,[illegible]	1,[illegible]	[illegible]	1,[illegible]	1,[illegible]	[illegible]	-	1,[illegible]	.48	.[illegible]	[illegible]
[illegible]	1,[illegible]	28,[illegible]	1,[illegible]	29,[illegible]	28,[illegible]	[illegible]	-	[illegible]	.49	1.[illegible]	[illegible]
[illegible]	140,[illegible]	2,[illegible]	[illegible]	2,[illegible]	2,[illegible]	1,[illegible]	-	5,[illegible]	.00	1.[illegible]	[illegible]
[illegible]	105,[illegible]	[illegible]	15.[illegible]	[illegible]	1,[illegible]	[illegible]	-	1,[illegible]	[illegible]	1.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	[illegible]	.14	.[illegible]	[illegible]
[illegible]	3,[illegible]	-	19.0	[illegible]	-	[illegible]	-	[illegible]	.03	1.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	10,[illegible]	1,[illegible]	1,[illegible]	4,[illegible]	1,[illegible]	[illegible]	790.70	[illegible]	.44	.[illegible]	[illegible]
[illegible]	[illegible]	14,[illegible]	[illegible]	16,[illegible]	20,[illegible]	1,[illegible]	1,[illegible]	[illegible]	1.03	1.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1,[illegible]	[illegible]	[illegible]	[illegible]	1,[illegible]	[illegible]	.37	.[illegible]	[illegible]
[illegible]	[illegible]	74,[illegible]	[illegible]	74,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.41	1.[illegible]	[illegible]
[illegible]	[illegible]	1,[illegible]	[illegible]	1,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.30	.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.27	.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1,[illegible]	7,[illegible]	300.[illegible]	1,[illegible]	[illegible]	[illegible]	458.00	[illegible]	.04	1.[illegible]	[illegible]
[illegible]	[illegible]	2,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.80	[illegible]	[illegible]
[illegible]	[illegible]	5,[illegible]	175.0	[illegible]	[illegible]	[illegible]	180.12	[illegible]	.27	.[illegible]	[illegible]
[illegible]	10,[illegible]	10,[illegible]	792.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.46	1.[illegible]	[illegible]
[illegible]	[illegible]	69.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.21	.[illegible]	[illegible]
[illegible]	[illegible]	474.0	38.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.26	1.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	2,[illegible]	148	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.06	.[illegible]	[illegible]
[illegible]	1,[illegible]	31	208	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.05	.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	49.0	[illegible]	[illegible]	[illegible]	19.99	[illegible]	.43	.91	[illegible]
[illegible]	[illegible]	1,[illegible]	65.0	[illegible]	[illegible]	[illegible]	107.91	[illegible]	.26	1.12	[illegible]
[illegible]	[illegible]	138.0	-	[illegible]	[illegible]	-	-	[illegible]	.10	.67	[illegible]
[illegible]	[illegible]	4.0	31.0	35.0	-	314.12	-	[illegible]	.38	1.42	[illegible]
[illegible]	[illegible]	[illegible]	-	[illegible]	[illegible]	-	-	[illegible]	.04	.10	[illegible]
[illegible]	-	117.0	-	[illegible]	[illegible]	-	-	[illegible]	-	-	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.36	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.36	[illegible]	[illegible]

* - Insured 363 A. Crop
* - Insured 34 A. Crop

Table [illegible]: Summary of Demand Projections by Labor and Occupation
[illegible] Central Region, 1[illegible]

Labor Occupation	Demand F.T.	Demand P.T.	Input Demand By Demand	Input Demand By Supply	Input Demand Total	Supply (Thousands) By Year	Supply (Thousands) [illegible]	Supply (Thousands) Total	Supply (Thousands) Labor	Supply (Thousands) Non-Labor	Supply (Thousands) Total	Price	Supply	Supply and Transport	Total Cost	Total Cost Labor	Total Cost Non-Labor	Total Cost Total
								Agriculture										
[illegible]	6[illegible]		7	1,[illegible]	1,[illegible]	1[illegible]	-	[illegible]	[illegible]	6	11	1.67	1.[illegible]	-	[illegible]	0.[illegible]	11	[illegible]
Skate-[illegible]	9[illegible]		1,150	1,[illegible]	2,[illegible]	[illegible],[illegible]	[illegible]	[illegible],[illegible]	1,[illegible]	[illegible]	1,[illegible]	1,[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	1,[illegible].[illegible]	.[illegible]	.[illegible]	[illegible]
Farm-[illegible]	1,[illegible]		1[illegible]	-	1[illegible]	[illegible],[illegible]	-	[illegible],[illegible]	[illegible]	[illegible]	[illegible]	[illegible].[illegible]	[illegible].[illegible]	-	[illegible].[illegible]	[illegible].[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	1,[illegible]	2,[illegible]	[illegible],[illegible]	[illegible]	[illegible],[illegible]	1,[illegible]	[illegible]	1,[illegible]	1,[illegible].[illegible]	[illegible].[illegible]	-	1,[illegible].[illegible]	.[illegible]	1.[illegible]	[illegible]
[illegible]	4		[illegible]	[illegible]	[illegible]	[illegible],[illegible]	[illegible]	[illegible],[illegible]	[illegible]	[illegible]	[illegible]	[illegible].[illegible]	[illegible].[illegible]	-	[illegible].[illegible]	.[illegible]	[illegible].[illegible]	[illegible]
[illegible]																		
								Industry										
Skate-[illegible]	2,[illegible]		[illegible]	7,[illegible]	8,[illegible]	[illegible],[illegible]	[illegible]	[illegible],[illegible]	1,[illegible]	[illegible]	1,[illegible]	1,[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	1,[illegible].[illegible]	.[illegible]	.[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	1,[illegible]	[illegible],[illegible]	[illegible]	[illegible],[illegible]	[illegible]	[illegible]	[illegible]	1,[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	1,[illegible].[illegible]	.[illegible]	1.[illegible]	[illegible]
[illegible]	1,[illegible]		1,[illegible]	5,[illegible]	1,[illegible]	[illegible],[illegible]	7,[illegible]	[illegible],[illegible]	[illegible]	[illegible]	[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	.[illegible]	.[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	.[illegible]	.[illegible]	[illegible]
								Commerce										
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
								Utilities										
Tender-[illegible] a	[illegible]		[illegible]	[illegible]	[illegible]	[illegible],[illegible]	-	[illegible],[illegible]	[illegible]	[illegible]	[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible]	[illegible]	[illegible]
Operate b	[illegible]		1,[illegible]	-	1,[illegible]	[illegible]		[illegible]	[illegible]	-	[illegible]	[illegible].[illegible]		-	[illegible].[illegible]	.[illegible]	.[illegible]	.[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

a - Wind Projection
b - Tourb Production

Agency Supplying Input	Input Sol. F.C.	F.C.	Input Total Use	Input Total Ag Sect	Total	Ag Sec	[illegible]
[illegible]	1,940		300	5,188	5,487	994,994	[illegible]
[illegible]	10,142		[illegible]	77,438	101,240	4,246,749	[illegible]
[illegible]	497		3,238	5,461	9,985	108,142	[illegible]
[illegible]	24,759		54,546	55,794	80,480	7,930,277	[illegible]
[illegible]	1,000		1,100	1,087	3,190	495,000	[illegible]
[illegible]	177		622	955	1,187	271,300	[illegible]
[illegible]	0		10	80	90	979	
[illegible]	5,490		-	5,490	5,490	-	
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1,[illegible]	7,400	10,408	104,[illegible]	[illegible]
[illegible]	2,048		1,[illegible]	583	7,[illegible]	5,[illegible]	[illegible]
[illegible]	12,[illegible]	[illegible]	18,[illegible]	12,767	31,[illegible]	[illegible]	[illegible]
[illegible]	14,[illegible]	[illegible]	[illegible]	40,[illegible]	77,[illegible]	5,[illegible]	[illegible]
[illegible]	1,[illegible]		5,[illegible]	4,471	12,290	[illegible]	[illegible]
[illegible]	381		990	1,[illegible]	1,481	[illegible]	[illegible]
[illegible]	409	[illegible]	[illegible]	240	700	[illegible]	[illegible]
[illegible]	1,987		2,[illegible]	1,[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1,009		1,[illegible]	[illegible]	1,[illegible]	1,[illegible]	[illegible]
[illegible]	8,001		5,041.8	1,100	[illegible]	[illegible]	[illegible]
[illegible]	10,890		[illegible]	21,410	28,[illegible]	3,[illegible]	[illegible]
[illegible]	45		84	182	186	4,[illegible]	
[illegible]	390		208	190	790	[illegible]	
[illegible]	750		2,[illegible]	77,[illegible]	79,187	[illegible]	[illegible]
[illegible]	42		140	1,[illegible]	1,[illegible]	[illegible]	
[illegible]	345		1,[illegible]	1,[illegible]	3,[illegible]	[illegible]	[illegible]
[illegible]	295		1,987.8	1,[illegible]	3,[illegible]	[illegible]	[illegible]
[illegible]	170		511	-	681	7,[illegible]	
[illegible]	-		32	-	32	[illegible]	
[illegible]	7,5		187	140	790	5,[illegible]	
[illegible]	-		-		-		
[illegible]	172		140	130	408	[illegible]	
[illegible]	127		2,117	-	2,[illegible]	90	

a = includes [illegible] b = includes [illegible]

Table 15.- Summary of [illegible] Control, by Programs, North Central Region, 1956.

Agency Cooperating (Code)	Acres Prot.		Acres Worked By Crews	Acres Worked By Scouts	Acres Worked Total	Ribes Pulled By Crews	Ribes Pulled By Scouts (Includ. [illegible])	Total	Man-Days Labor	Man-Days Super.	Man-Days Total	Costs Labor	Costs Super.	Supplies and Transport	Total Costs	Per Acre Total Man-Days	Per Acre Costs	[illegible]
[illegible]	13,700	838	10,000	18,484	28,984	2,704,130	136,307	[illegible],477	15,701.0	575.4	16,297.1	87,475.75	4,503.13	1,633.02	[illegible]	.55	.98	[illegible]
[illegible]	4,907		6,012	1,739	8,451	3,055,998	47,123	[illegible],400,429	12,804.0	464.5	13,268.5	65,777.88	9,670.55	1,305.45	75,060.76	1.44	8.87	[illegible]
[illegible]	70,465	36	56,051.6	116,005	174,856.5	10,342,785	88,100	[illegible]	55,970.0	4,770.0	60,250.0	71,734.90	16,487.22	5,779.94	97,438.13	.25	.54	[illegible]
[illegible]	998		1,142	3,481	5,813	190,275	1,812	112,082	1,440.0	65.0	1,510.0	1,445.00	355.80	-	1,798.58	.82	.40	[illegible]
[illegible]	36,030	35	78,878.8	150,348	229,127.3	18,409,880	200,387	[illegible]	77,384.0	3,708.4	80,831.4	215,786.88	14,704.13	4,873.75	235,144.77	.35	1.11	[illegible]
[illegible]	575		1,354	8,700	10,054	886,985	1,400	317,183	908.0	200.0	1,118.0	5,384.05	1,950.54	943.90	9,688.49	.12	.90	[illegible]
[illegible]	6,931		8,202	8,486	11,677	592,934	17,442	[illegible]	6,368.0	288.5	7,071.0	7,307.87	2,196.14	889.90	12,394.49	.09	1.04	[illegible]
Private	411.7		119	437	456	10,787	180	12,404	85.5	4.5	88.0	285.87	17.17	2.50	314.17	.010	.09	[illegible]
State	5,457	8	800	11,081	11,881	79,658	1,140	[illegible]	573.0	85.5	756.8	473.40	565.65	17.77	1,150.82	.07	.10	
Grand Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			

Table 15a - Summary of [illegible] Eradication, by Programs, North Central Region, 1956.

[illegible]	448		7	1,073	1,080	521	-	522	10.0	4.0	14.0	4.37	12.36	-	16.73	.03	.01	
[illegible]	4		304	-	304	161,000	-	50,000	380.0	42.0	422.0	1,000.00	100.37	100.50	1,187.[illegible]	1.24	1.29	[illegible]
[illegible]	2,005		5,148	6,424	11,572	349,787	1,[illegible]	[illegible]	2,078.0	120.7	2,198.0	7,104.10	714.78	283.02	8,102.90	.54	.70	[illegible]
[illegible]	272		305	100	405	49,870	-	[illegible]	456.0	36.0	492.0	604.37	181.80	3.00	879.30	1.21	2.17	[illegible]
[illegible]	1,144		1,074	2,704	3,000	270,152	1,740	[illegible]	2,177.0	134.0	2,311.0	3,011.10	791.68	39.34	[illegible]	.07	[illegible]	[illegible]
[illegible]	1,585		1,400	5,057	3,646	253,402	7,141	[illegible]	882.0	48.0	930.0	[illegible]	300.12	18.61	[illegible]	.11	.34	[illegible]
Private	185		1,117	-	1,117	56	-	50	14.0	-	14.0	28.00	-	-	28.00	.01	.03	-
State	353		50	990	1,083	4,860	105	3,375	20.0	14.0	34.0	40.00	107.17	18.10	165.27	.03	.17	[illegible]
Grand Total	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 15b - Summary of [illegible] Control, by Programs, North Central [illegible] Region, 1956.

[illegible]	15,196	838	10,507	18,059	28,566	2,704,413	136,307	[illegible]	15,911.8	675.4	14,587.2	[illegible]	4,774.78	1,533.50	[illegible]	.55	.93	[illegible]
[illegible]	4,557		7,818	1,940	10,043	5,344,413	47,123	[illegible]	14,264.0	589.5	14,853.5	26,814.15	9,460.45	1,830.43	75,115.[illegible]	1.16	3.05	[illegible]
[illegible]	74,041	36	58,370.3	127,480	185,150.3	10,837,243	88,745	[illegible]	50,186.0	3,000.0	53,545.0	75,862.40	14,134.20	5,504.13	97,040.05	.65	.92	[illegible]
[illegible]	1,069		1,485	2,551	4,035	220,541	1,843	225,092	1,909.0	77.0	2,000.0	1,709.00	435.50	5.00	1,962.35	.10	.80	60.7
[illegible]	36,195	35	79,852.8	132,348	212,658.2	16,377,881	200,352	[illegible]	80,125.0	4,045.4	82,978.4	213,757.48	16,310.41	4,300.20	235,335.55	.38	1.18	[illegible]
[illegible]	578		1,504	8,730	10,234	894,701	1,400	[illegible]	905.0	200.0	1,115.0	5,384.05	1,354.34	962.10	7,624.13	.11	.80	75.1
[illegible]	7,994		6,890	10,538	17,428	1,161,459	64,084	[illegible]	7,940.7	774.0	8,315.0	12,137.41	2,590.40	585.58	15,388.45	.12	.89	[illegible]
Private	154.7		1,377	425	1,773	10,371	180	11,855	40.5	3.5	44.0	308.35	17.27	2.50	352.59	.06	.14	5.5
State	2,798	3	800	12,351	13,151	81,818	2,777	[illegible]	659.0	110.5	769.5	713.40	605.85	65.85	1,308.10	.06	.10	5.5
Grand Total	151,994.3	900	145,004	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	176,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 26. - Summary of Sites Evaluated by Surveys 1910-1920 in North Central Region Including the Top 5 Sites Evaluated. (1,[illegible] acres of sites [illegible] 1,[illegible] acres in total surveyed area).

Agency	Average Score	Median Sites Surveyed	Man Year Days Spent	% Total Average Score
Dep. & Comp.	111,170	7,[illegible],145	37,131	9.46
WPA-CCA & CWA	117,[illegible]	[illegible],[illegible]	111,104	[illegible]
FSA	145,[illegible]	[illegible],[illegible]	239,[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	16,[illegible]	11.[illegible]
Total	[illegible]	[illegible]	[illegible]	100

Table 27. - Summary of Sites Evaluated by Surveys 1910-1920 in North Central Region Including the Top 5 Sites Evaluated. (1,[illegible] acres of sites [illegible] 1,[illegible] acres in total surveyed area).

Agency	Average Score	Median Sites Surveyed	Man Year Days Spent
[illegible]	1,[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]

Table 15.- Status of Local Control Operations, Infield Test, 1936 to December 31, 1936, North Central Region

State	Acres S. E. Worth Protection	Acres Infested to Date: White Pine	Acres Infested to Date: White Pine Blowing Site	Acres Worked to Date	% Acres Infested Worked
Michigan	542,338	181,087	665	470,276	[illegible]
Wisconsin	327,060	192,905	7,915	420,[illegible]	57.7
Minnesota	664,316	66,618	-	149,545.7	16.[illegible]
Iowa	5,000	731	100	101,764	[illegible]
Illinois	1,200	158	719	[illegible]	57.7
Indiana	1,000	368	15	[illegible]	15.0
Ohio	5,100	2,375.5	-	59,665.5	44.[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	

Table 17.- Status: Local Control, Federal Protection,
1915 to December 31, 1955,
North Central Section.

State	Acres F. P. South Protection	Acres Thus Time Initially Protected to Date	Acres White Pine Given Sec. Protect. to Date	Acres Served by Spec. Serv. to Date	% Blow Down Total Fire	% Blow Down Initially Fire
Michigan	645,118	181,087	8,484	14,558	1,008	[illegible]
Wisconsin	397,050	122,202	9,979	38,558	1,096	[illegible]
Minnesota	362,616	68,619	1,064	6,970	.257	[illegible]
Iowa	6,000	781	-	-	-	-
Illinois	1,500	453	500*	7,421	48,526	-
Indiana	1,000	588	-	-	-	-
Ohio	9,200	3,270.0	-	-	-	-
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Includes 175 acres given Sec. protection.
Includes 125 acres given Sec. protection.

Table 16. - Summary of Initial Local Control Performed on National Forests in Michigan North Central Region from Inception to Dec. 31, 1936.

National Forest	Year Work Done	A. Protected W. P.	W. P. P. S.	Acres Worked	Number Ribes Pulled	Man-Days Labor	Man-Days Supervision	Costs Labor	Costs Supervision	Costs Other	Costs Total
	1925	200		700	100		2		14.75	0	14.75
	b1932-36	654		2,157	54,519	109	66	108.67	181.07	0	289.74
	1933		524	1,000	5,000	30	7	30.00	31.60	0	61.60
Ewen	1952	500		805	2	1	0	3.00		0	3.00
	1954		*	47	1,040	43	6	129.00	28.60	0	157.60
	1956	907		2,191	17,383	221	10	281.33	44.80	0	326.13
	Sub-Total	1,821	524	5,990	71,524	404	51	552.00	240.72	0	792.72
Manistee	1934	140		685	0	0	1	0	5.07	0	5.07
	1933	1,531		1,954	622,419	1,680	640	1,680.00	1,282.43	0	2,962.43
Ottawa	1932	5,181		9,781	2,346,677	8,480	406	05,360.00	3,156.30	691.69	29,203.99
	1933	315		1,266	607,541	1,046	39	1,569.00	463.60	115.38	2,147.98
	Sub-Total	7,027		13,100	3,196,637	11,146	885	28,509.00	4,902.73	807.06	34,314.41
	a1933	1,066		4,680	90,385	345	161	591.00	527.08	32.01	1,150.09
	1934	357		1,915	74,071	689	38	867.00	318.41	74.89	1,260.30
Siscowitz	1934		546	1,160	9,003	16	2	42.00	11.16	4.43	55.59
	1935	425		1,140	86,594	604	55	906.00	392.40	0	1,298.40
	Sub-Total	1,454	546	8,895	260,053	1,654	256	2,412.00	1,250.11	111.33	3,773.44
	1934	2,611		7,490	419,688	1,498	75	4,492.00	444.58	580.13	5,517.90
Marquette	1935	100		194	84,053	196	18	592.50	101.30	49.71	743.51
	Sub-Total	2,611		7,684	503,741	1,694	93	5,084.50	545.88	629.84	6,261.41
	1933	200		905	100	0	1	0	14.71	0	14.71
Total N. F.	1933	2,770	524	3,441	751,253	1,241	115	3,305.67	2,269.80	14.71	5,590.18
in Mich.	1934	8,764	546	21,412	2,849,975	16,307	870	40,200.50	9,680.50	1,021.03	50,911.03
	1935	1,241		4,000	375,595	1,146	131	3,048.50	1,086.18	245.33	4,380.01
	Total	14,163	964	37,154	3,976,793	18,957	1,181	50,548.50	7,187.51	1,279.32	58,015.33

Work not completed because area was placed in species other than white pine.

bIncludes a small amount of map-up work in 1935.

*Includes a small amount of map-up work done in 1934.

Table 19. - Summary of Initial Eradication Local Control Performed on National Forests in Wisconsin North Central Region, from Inception to Dec. 31, 1935.

National Forest	Year Work Done	Acres Protected W. P.	Acres Protected W. P. S.	Acres Worked	Number Ribes Pulled	Man-Days Labor	Man-Days Supervision	Costs Labor	Costs Supervision	Costs Other	Costs Total
	1932	145	-	495	71,691	490	50	704.25	194.70	0	898.95
	1933	-	120	994	30,662	160	13	340.75	85.55	0	426.30
Nicolet	1934	2,480	1,247	8,352	546,459	1,677	156	6,630.45	696.60	73.35	6,400.40
	1935	895	635	3,696	160,458	2,126	26	2,191.80	585.69	257.75	3,035.24
	Sub-Total	3,520	2,304	12,857	899,367	4,473	250	9,756.25	1,562.14	331.10	11,651.49
	1933		1,416	1,363	114,088	756	47	1,099.00	302.68	0	1,401.68
Chequamegon	1934	888	755	4,662	383,756	1,795	155	5,305.50	689.02	86.60	6,071.12
	1935	5,013	-	6,080	591,642	2,384	119	5,486.00	1,050.06	462.95	6,999.01
	Sub-Total	5,901	2,171	12,105	1,081,487	4,935	342	9,921.50	1,990.72	549.55	12,471.81
	1933	146	1,336	2,348	206,482	1,266	90	2,024.00	302.93	0	2,326.93
Total	1934	2,372	2,754	12,014	1,232,183	3,652	341	10,988.00	1,554.82	162.15	12,675.00
W. P.	1935	5,908	635	10,406	552,150	4,887	145	8,697.55	1,205.18	720.70	9,623.43
	Total	7,425	1,975	35,908	1,990,866	9,473	576	19,688.55	3,033.93	882.85	22,722.43

Table 20. - Summary of Initial Eradication, Local Control Performed on National Forests in Minnesota North Central Region, from Inception to Dec. 31, 1935.

National Forest	Year Work Done	Acres Protected W. P.	Acres Protected W. P. P. S.	Acres Worked	Number Ribes Pulled	Man-Days Labor	Man-Days Supervision	Costs Labor	Costs Supervision	Costs Other	Costs Total
Chippewa	1933	1,468		4,173	130,796	1,430	143	1,673.44	566.68	216.30	2,456.42
	1934	2,214		4,754	557,960	2,851	156	7,089.13	796.02	515.26	8,340.42
	1935	496		1,719	409,164	1,231	97	1,944.00	397.18	226.46	2,567.64
	Total	4,178		10,646	1,127,920	5,082	406	10,646.57	1,759.88	958.02	13,364.48
Superior	1933	120		437	1,881	4	12	6.00	150.00	0	156.00
	1934	2,495		5,699	1,048,141	4,670	365	15,481.54	1,963.91	1,848.62	19,298.17
	1935	6,851		9,979	1,506,157	5,772	202	8,806.45	1,905.69	699.66	11,413.80
	Total	9,466		16,175	2,556,179	10,446	579	24,293.99	3,819.60	2,548.18	30,857.77
All N. F. in Minnesota	1933	1,588		4,610	132,677	1,434	155	1,679.44	716.68	216.30	2,612.42
	1934	4,699		10,453	1,606,101	7,121	534	22,570.79	2,759.93	1,857.88	27,188.60
	1935	7,347		11,698	1,915,321	7,253	595	10,750.45	2,102.77	926.02	13,779.24
	Totals	13,634		26,761	3,654,099	15,928	1,084	34,960.68	5,579.38	2,900.20	43,440.26

Table 21. - Summary of Initial Eradication, Local Control, Performed on National Forests, Entire North Central Region, from Inception to Dec. 31, 1935.

Entire North Central Region N. F.	1933	595		765	100	0	3	0	14.75	0	14.75
	1935	5,562	1,850	10,630	1,[illegible],[illegible]	5,008	685	6,112.11	3,500.69	328.31	9,[illegible]
	1934	16,812	3,249	29,610	3,[illegible],[illegible]	11,380	1,402	64,297.79	6,171.35	3,[illegible].15	73,[illegible]
	1935	19,700	985	30,98[illegible]	3,141,287	15,803	476	[illegible],470.90	4,[illegible].15	4,091.81	[illegible]
	Totals	42,669	6,084	69,947	8,[illegible]	32,191	2,566	88,[illegible].67	16,151.18	8,[illegible].28	113,[illegible]

Table 22 - Summary, Nursery Sanitation, North Central Region, 1938.

Ownership Class	Agencies Supplying Labor	No. of Nurseries	Acres Protected in Quarantine	Acres Cleared of Hibes	No. Hibes Pulled: Ind.	No. Hibes Pulled: Other Cult.	No. Hibes Pulled: Wild	No. Hibes Pulled: Total Hibes	Man Day: Labor	Man Day: Sup.	COSTS: Labor	COSTS: Sup.	COSTS: Hibes Comp.	COSTS: Other	COSTS: Total
							MINNESOTA								
State	NEA MSUF, FERA, State	3	52	1,052	-	16	41,005	41,024	1,104	51	1,187.38	318.63		14.00	1,514.01
U.S. Forest Service	FS-RCF, FS-CCC, FERA,	4	175	1,723	3	161	290,108	290,234	4,439	251	7,279.45	1,336.41		336.10	8,952.41
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
							WISCONSIN								
Private	Wisc. SCF	1	4	92	-	-	12	12	114	5	179.00	50.00		72.24	300.10
State	Wisc. SCF	3	18	780	-	-	160,087	160,087	1,008	44	1,579.00	250.77		62.20	1,890.09
U.S. Forest Service	FS-RCF	2	65	840	-	-	16,515	16,515	900	111	1,401.50	785.55		141.90	2,327.00
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
							MICHIGAN								
Private	Owner-NEA	3	50	500	-	10	7,510	7,510	16.5	21	32.87	105.36			138.63
State	SCF-NEA	2	35	400	-	-	107,000	109,000	998	38	888.10	171.00			750.10
U.S. Forest Service	FS-RCF, NEA	1	80	400	-	621	1	622	1.0	20	9.49	97.09			106.58
U.S. Indian Service	IS-RCF	1	5	100	-	57	80,998	80,975	47	5	80.08	15.75			105.04
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
							IOWA								
Private	Owner-NEA	[illegible]	70	[illegible]	-	-	[illegible]	[illegible]	-		[illegible]	[illegible]	[illegible]		[illegible]
							OHIO								
Private	Owner-NEA	7	253	3,197	[illegible]	1,141	48,[illegible]	51,926	512	50	923.50	606.84	7		1,530.34
State	Owner-NEA	2	156	1,215	2	540	661	1,207	19	9	191.00	141.[illegible]	*		[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
							Regional Summary by Ownership Class, 1938								
Private		13	480	5,810	[illegible]	1,134	99,543	41,[illegible]	881.5	105	1,105.47	1,[illegible].46	10.00	29.22	2,270.45
State		11	269	3,495	2	896	268,647	290,805	2,814	187	3,491.55	668.34		97.88	4,[illegible].24
U.S. Forest Service		7	271	3,052	3	701	406,643	407,409	5,345.0	482	8,[illegible].74	3,[illegible].57		180.90	11,[illegible].[illegible]
U.S. Indian Service		1	5	100	-	57	80,975	80,975	47	5	80.08	15.75			105.04
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Hibes compensation included in labor costs.

Table 24a. - Data on Survey Spraying, 1970 and 1971 - 1972 Inc.
North Central Region

State	Year	Number Surveying	Acres Worked	No. Sites Destroyed	Total Cost	Man-days used
Ark.	1970	*	6,293	850,059	$13,707.37	4,440
Ill.	1970-'74 Inc.	7	2,740	209,970	11,152.12	6,076+
Ind.	*	8	2,545	187,478	10,742.65	5,500+
Mich.	*	9	2,132	155,600	8,630.65	3,000+
Iowa	*	3	1,392	14,125	1,067.10	534+
Ohio	*	5	1,532	5,540	1,663.54	702+
Total		32	14,640	2,223,045	$47,103.31	23,150

*Estimated on basis of $8.00 per man-day from actual cost.

Indian Service. Sixteen of these nurseries applied for white pine shipping permits in 1937, eight of which were private nurseries, three state nurseries and five Federal.

Nursery sanitation was performed around the remaining 18 nurseries in the region which had not applied for pine shipping permits but wanted assurance that their white pine planting stock would be free from blister rust before shipping within their respective states.

Cultivated Black Currant Eradication

The cultivated black currant eradication program previously started in Michigan was continued in 1938. The initial work was nearly completed and in addition cultivated black currant recheck work was done in 21 counties in Michigan.

Cultivated black currant work begun in 1934 in Wisconsin and Minnesota was continued on a greatly increased scale in 1938 due to the use of men under the WPA program. Systematic cultivated black currant work was also initiated in Iowa and in Ohio. In Iowa cultivated black currant eradication was done in those counties in Northeastern Iowa in which local control work had been completed around white pine shelterbelts. In addition cultivated black currant work was performed in connection with a systematic pre-eradication survey of shelterbelts in Iowa. In Ohio cultivated black currant eradication work was performed in the northeastern portion of the state principally by union students under the WPA program, within and near the towns in which their schools were located.

The work accomplished on cultivated black currant eradication may be seen in Table 23. A good criterion as to the relative abundance of cultivated black currants is the ratio of the number of cultivated black currant locations found to the total number of inspections made. In Table 23 this relationship is expressed as the average number of *R. nigrum* locations per thousand inspections made. Note that according to this table Minnesota showed the greatest number of *R. nigrum* locations per thousand inspections and that Wisconsin showed the least. The reason the number was so high in Minnesota was due chiefly to the city of Duluth where *Ribes nigrum* bushes were very abundant. Most of that portion of Minnesota outside of the immediate vicinity of Duluth showed a much smaller frequency of cultivated black currant locations.

In Table 24 there is shown a statement of the number of cultivated black currant bushes found as a result of the recheck in 21 counties in Michigan. Initial cultivated black currant eradication in these counties had been performed three or four years previous to 1938. Note that the average number of locations per thousand inspections on the recheck in Michigan is only slightly over half the number found in the nine counties in Michigan in which initial cultivated black currant work was done in 1936. Note also that on the recheck there were found only slightly over one third the number of bushes per location as in the initial work done in 1936.

Blister Rust Control State Regulations

The Ohio Department of Agriculture held a public hearing at Columbus, Ohio, on September 27, 1938, for the purpose of promulgating a regulation to provide for the control of the white pine blister rust disease including the removal of or regulation of movement of five-needled pines and currant and

TABLE 23.- [illegible]

[illegible]

State	Number Counties In Which Vote Was Cast	Total Inspections	% Labor Used Locations	% Labor Used Number	% Labor Employed Locations	% Labor Employed Number	[illegible] Total	[illegible]	[illegible]	[illegible]
Michigan	5	5,170	108	3,184	109	3,184	570[a]	17.1	[illegible]	[illegible]
Minnesota	28	176,490	1,941	13,066	1,065	13,065	11,080[b]	6.3	8.1	[illegible]
Nebraska	18	80,064	4,000	10,481	2,440	18,848	-	8.0	29.9	-
Iowa	10	15,188	120	797	11	500	430	8.1	5.3	[illegible]
Ohio	11	[illegible]	671	[illegible]	489	8,805	494	12.9	30.2	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[a] Labor [illegible] 133 Non-Corp
Labor [illegible] 5 Non-Corp
Labor [illegible] 431 Non-Corp

[b] Labor [illegible] 8,8[illegible] Non-Corp
Labor [illegible] 1,[illegible] Non-Corp
Labor [illegible] 7,317 Non-Corp

TABLE 24.- [illegible]

[illegible]

State	Number Counties In Which Vote Was Cast	Total Inspections	% Labor Used Locations	% Labor Used Number	% Labor Employed Locations	% Labor Employed Number	Number Non-Corp Total	[illegible] Non-Corp	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[a] [illegible] Non-Corp
[b] [illegible] Non-Corp

Table 24a. - Data on CBC Eradication 1930, and 1910 - 1935 Inc.
Initial Eradication and Comback
North Central Region

State	Date	Nucleus Locations Found	Nucleus Locations Destroyed	Number Nuclei Found	Number Nuclei Destroyed	Total Cost	Man-Days
All	1930	5,[illegible]	5,300	47,[illegible]	46,726	$ 45,834.40	14,629
All	1934	8,[illegible]	6,101	60,[illegible]	57,144	36,[illegible].62	7,204
Michigan (only)	1935	44	214	385	1,210	1,[illegible].00	63
Michigan (only)	Up to 1932 (inc.)	2,[illegible]	2,400+	32,[illegible]+	31,940	24,[illegible].44	4,[illegible]+
All 1929 - 1935 Inc.		15,171	14,415	134,746	136,730	$100,[illegible].72	26,836

* Estimated
++ Estimated on basis of approximately $5.00 per man day including expenses (per diem and travel)

gooseberry bushes". This regulation became effective October 15, 1939. It outlaws the cultivated black currant bush and authorizes its destruction under state regulation without compensation. It prohibits the movement within the state of white pines grown and produced in a state nursery not properly protected against blister rust by the removal of all Ribes within 1500' and cultivated black currants within one mile thereof. It provided for the establishment of blister rust control areas within 500' from the bounds of native white pine areas or white pine plantings or for a distance of 1500' from white pine nursery plantings which in the judgment of the Director of Agriculture has sufficient value to warrant such classification. The replanting of currants or gooseberries in a blister rust area is prohibited.

Studies in Effectiveness of Control

During 1935 Dr. E. E. Honey was employed in the Milwaukee office to make studies in the effectiveness of the control program. These studies can be divided into two parts -- one is the establishment of pine infection study plots on areas where the disease is present and where Ribes eradication has been done. The object is to study the effect of such Ribes eradication in the reduction of cankers.

The other general type of study inaugurated in this region for the first time was the establishment of permanent Ribes regeneration study plots for the purpose of studying the effect on the Ribes population of Ribes eradication efforts. It is obvious that a normal crew doing effective Ribes eradication work will almost unavoidably leave Ribes bushes or crowns after eradication. Also in pulling large Ribes bushes the ground is thereby cleared and very often numbers of Ribes seedlings spring up from seeds left in the soil. The most effective time of second eradication is that time after which Ribes seedlings and other growth coming up after eradication is plainly visible and before such bushes produce fruit. It is the purpose of these permanent Ribes regeneration study plots to determine when is the most effective time of doing second eradication following initial working in the various Ribes types in this region. The Ribes regeneration plots are put in before eradication and the locations of such plots are not made known to the Ribes eradication crews. Following Ribes eradication the same year data are taken on the number and feet of live stem of various Ribes species found. Each year thereafter the same type of information is secured.

Three e e shown following quoted in full Dr. Honey's summary reports on "White Pine Infection Study Demonstration Plots", and "Permanent Ribes Regeneration Study Plots." Detailed reports on each of the separate plots are on file in the Washington, Milwaukee and State Leaders' offices for plots established in those states.

"Guide for the Blister Rust Infection Study Demonstration Plots-
North Central Localities
1938

Introduction and Purpose-

Prior to 1935 several White Pine Infection Study Plots had been established in the North Central Region for the purpose of demonstrating to the general public the dangers from Blister Rust on white pine and the effectiveness of Ribes Eradication in the control of this disease.

During the fall of 1935 certain of these pine study plots were continued or reestablished and other study plots established in new localities where Blister Rust was known to occur in the states of Michigan and Wisconsin. The purpose of these plots is to secure quantitative data regarding the progress of white pine Blister Rust in these localities, to determine the destructiveness from year to year of the disease, and, the effectiveness of Ribes eradication in its control, as a guide in formulating or modifying the permanent control program. The plots have been used not only for the above purpose but have served very effectively as demonstration plots for informing the general public and teaching the Blister Rust Control personnel the typical symptoms of the disease, its progress and destructive effects on white pine, and the effectiveness of the Ribes eradication in the control of the disease. The plots have more than justified themselves from a purely demonstrational point of view because of the better cooperation secured in the localities where they were located. Because of these plots certain pine owners now arrives at a greater appreciation of the value of their pine stands and, whereas formerly, they were indifferent or antagonistic to the Control program, now seek ready cooperation. They have been instrumental in securing the cooperation of influential citizens in various localities.

Establishment of Pine Study Plots:

Procedure-

After determining the location for a Pine Infection Study Plot in a Blister Rust Infection center the plot is laid out using the square chain as the unit of area. Labelled stakes are placed at the corners of each square chain. The plot may consist of one or more strips one chain wide running for one or more chain lengths parallel to a base line and is divided into square chains by numbered stakes and transects. The base line is established with the use of a surveyor's chain, axe and a compass. The first stake, or starting point, on the base line is labelled "Sk. 0, Tr. 0" (strip 0, transect 0)s at the end of the first chain length the stake is labelled "Sk. 0, Tr. 1," (= strip 0, transect 1,) at the end of the second chain length the stake is labelled "Sk. 0, Tr. 2," and so for each additional chain length the strip and appropriate transect number is given. The stake one chain away and opposite that labelled "Sk. 0, Tr. 0" is labelled "Sk. 1, Tr. 0" and along the line runnin parallel to the base line at the other appropriate chain lengths the following labels are placed: "Sk. 1, Tr. 1", "Sk. 1, Tr. 2", "Sk. 1, Tr. 3", etc. The strip and transect numbers on the row of stakes one chain from and parallel with the base line are used in designating the particular square chain under consideration: thus "strip 1, transect 1" refers to the first square chain, "strip 1, transect 2" refers to the second square chain. In other words the strip and transect numbers diagonal across the square chain from the "Sk. 0, Tr. 0" stake or its equivalent are used in designating the particular square chain. Additional strips may be added to either side of the original strip and may be designated, as illustrated in Chart I, as "Strip 1 L." or "Strip 1 R.," "Strip 2 R.," etc. The

[illegible] will vary entirely upon the local conditions in the area selected for the plot. The strips of transects may be of the same or of different lengths and may or may not run according to the cardinal directions. Care must be taken, however, that each square chain area is laid out on the square, i.e., that the transects run perpendicular to the base line. For example, the 4 square chains in the Chelan Pine Infection Study Plot was arranged in a square of two strips with two transects on the base line; the Tonerack Creek plot is in one strip, one chain wide and two chains long; the Anthony plot and Block I of the Twin Tops plot consist of 5 square chains arranged in a strip one chain wide and five chains long.

"After measuring off the plot and driving stakes at the corner of each square chain a string is run around each square chain to mark the boundary and all the white pine trees within are given a number, tagged and mapped. In establishing the earlier plots the trees were numbered and mapped within the boundaries of each square chain by pacing back and forward across the square chain, using the eye only as a guide in determining the number and location of the trees. Commonly a width of approximately 8½ feet was squared on each strip across the square chain. This was fairly satisfactory where trees are very scattered and small trees should but it proved entirely inadequate where trees were more dense. By this method many trees were missed, especially the very large or very small and inaccurate location of the trees resulted. In the plots studied earlier, Ribes had been eradicated. However, in plots studied later where Ribes had not been eradicated and where both Ribes bushes and white pine trees were present both trees and bushes were mapped which demanded a more accurate procedure. For the above reasons the following procedure is now used in establishing Pine Infection Study Plots.

"At the time the plot is being laid out and before the surveyor's stake, which is used in measuring off the strips along the sides, has been moved, small temporary stakes are set at every 20 links (= 13.2 feet) between the permanent square chain corner stakes. Later as the plot is being mapped string is run from these temporary stakes across the square chains thus giving 5 narrow lanes 13.2 feet wide per square chain. These narrow lanes represent the width of two milacres. In mapping, two sticks, cut to the length of one square milacre (6.6 feet) many are used by laying them lengthwise end to end to one another down the center of each lane.

"By this method each milacre may be quickly indicated as the mapping proceeds. When the first four milacres have been mapped the two sticks may be moved ahead to indicate the next milacres to be mapped. By having this procedure in mind at the time the plot is laid out a very accurate location of bushes and trees may be made for each milacre with a minimum of effort. Smaller lanes might be marked off with string laid in a perpendicular direction [on each square chain] thus completely gridding it; but this is not deemed necessary with the rapid use of the two sticks. On each square chain the following information was taken for each pine: location as to strip and transect, pine number, height, number of years needles were later, whether dead from Fliester Rust or some other cause, or infected, year's growth affected and number of cankers present according to stage of development or whether the canker was dead. In some cases data were taken as to whether the organ affected was dead beyond the canker ("flag"), the size of tree with greatest number of infections, and whether the canker was on the main stem or on a lateral. (See form No. 1.)

"In cases where Ribes had been eradicated no attempt was made to learn what the previous Ribes situation had been, what Ribes may have been responsible for introducing the disease and what Ribes may have been responsible for maintaining and intensifying the disease within the area. Where eradication had proceeded

the establishment of the plot by a count and only a count has made of the number of cankers occurring on each owners chain and an estimate made of the feet of live stem.

"For the purpose of taking data on Pine Infection Study Plots in the future, (1) a slightly different Pine Infection record sheet (See Form No. II), (2) a standard map sheet on a scale of 8 inches to the chain (66 feet) in which it is possible to indicate the pine and Ribes on each milacre, by means of a grid (See Form III.), and a special Ribes record sheet (See Form IV.) for taking the Ribes data for each milacre have been prepared.

"Ribes species present on the plot are indicated on the map by the use of the first or, in case of a duplication, of first and second letter of the species name. Thus a " Ribes nymosbati, bi " R. hirtellum, hu " H. hudsonianum, etc.

"Trees, on the Study Plot map white pine crons are indicated by number and Ribes species by letters. These new forms will be used in establishing Pine Infection Study Plots in the future. In the new forms cankers classified as "first symptoms" and "juvenile" are merged together under the term "incipient" cankers and include young cankers prior to the production of pycnia. The practice has been to call all young cankers, which have not produced pycnia, "first symptoms" in case the size of the apparent lesion on the affected organ does not exceed 1/2 to 3/4 of an inch in its longest dimension; whereas any similar lesion more than this in length has been termed "juvenile". The segregation of "first symptoms" from "juvenile" is merely arbitrary and does not appear sufficiently significant to be necessary.

"It will be seen from this that the basis for classifying cankers is, for the most part, based on the evident signs present. Thus, "incipient" cankers represent the early mycelial development within the susept tissue (of stem or twig) resulting in typical modifications of the organ affected such as blanching of the color and swelling of the area within which the mycelium is most abundant. Needle infection although frequently observed is not recorded. Should the infected needle fortuitously before the mycelium reaches the twig infection would not progress with the tree and notwithstanding that infection would have been initiated on the tissue, such an infection would have no significance in the starting or the intensification of a Blister Rust inferting canker. When the infection has progressed into the fascicle base and twig or branch tissue it is potentially more likely to do permanent damage to the tree.

"As soon as the mycelium within the tissue produces the first pycnial stage, the canker is automatically removed from the so-called "incipient" canker status to that of first pycnia. When the mycelium produces pycnia more than once it is then classed as "pycnial score" and thus the succeeding stages, "first aecia", and "aecia more than once", represent succeeding stages in the development of the pathogens which are accompanied in their development by typical abnormalities on the part of the white pine susept. Frequently "dead" cankers are observed. Some of these dead cankers may have passed through any or all of the above mentioned stages and then died for natural reasons, or under, it appears from observation, suppression of the affected susept organ is commonly the cause. The lower branches on the trees are commonly the most heavily infected and frequently because of suppression of these the pathogen, an obligate parasite, is killed before it reaches the trunk of the tree.

"The record of "cankers causing flags" refers to those cases where the twig or branch dies beyond the canker; and it is merely another means to record the severity of the disease.

Other advantages of the new set up forms lie in the greater emphasis placed on the Ribes situation in relation to pine infection and on other accompanying ecologic conditions existent on the pine plot. Infection and intensification of infection on pine is dependent upon the "spore load" reaching the trees and this in turn is dependent upon the kind, number, size, percentage of leaf surface infected, and relative location of Ribes to pine to a considerable extent and for that reason a Pine Infection study necessarily must give consideration to the Ribes situation. A record of other items relative to the over-story, density and kind of other vegetation on the plot, the moisture, soil, prevailing wind in the locality, or any other special situation which might affect the introduction and spread of Blister Rust should be recorded. This record should include the previous history of the plot, cutting and cultural practices to which it has been subjected, etc. insofar as it is possible to obtain it.

Taking Data.

Certain arbitrary rules were followed in taking the data in the field. Tree height was estimated by the eye. For smaller trees this was quite accurate; for larger trees opinions might differ to the exact foot, but this is of no consequence, since the judgment made was accurate enough to properly classify the tree in the category necessary for our record. In examining trees it was the custom to start at the bottom and go systematically around and up examining carefully the main stem or trunk, each whorl of branches, and twigs to the height one is able to reach standing on the ground. Trees up to ten feet could generally be thoroughly examined by reaching up and bending down the top branches. However, commonly in trees above this height the stem and branches were so rigid that it was impossible to thoroughly inspect them to a height greater than eight feet. Therefore, in the following tables giving tree and canker analyses where trees are more than 10 feet in height, it is indicated that the trees have been examined to a height of eight feet only.

In cases where branches had been removed to a height above that which could be reached the tree was classified as "too high to examine". While such white pine trees are numbered, tagged and their presence recorded they really do not enter into the calculated data of the plot because they were not examined but merely give us one item of the ecologic set up of the plot. Commonly they are large trees composing the over-story on the plot and with the exception of the Teal Plot are believed, for the most part not to be infested. On the Teal Plot it is believed, from evident "flags", that all trees classed as "too high to examine" were infected although the number and stage of development of the cankers on these trees were not determined. Some trees, even of a greater height than many classified as "too high to examine", had branches from or near the ground and these are classified as examined to the 8 foot height. All trees more than twenty feet in height were placed in one category because the continuation of 2 foot classes did not appear significant beyond this height.

All examined trees were classed as (1) dead from Blister Rust, (2) dead from some other cause, (3) infected or not infected with Blister Rust. The form used in recording this data, is so arranged as to avoid errors if adhered to. Insofar as possible all individual cankers were recorded along with the year's growth at the canker center in the case of living trees. Because of age, death, subsequent weathering and other reasons it was sometimes impossible to determine the exact year's growth in which infection first took place on the living trees. In such cases the year's growth infected was indicated as "undetermined" for the tree or canker. It is probable that the majority of such "undetermined" cankers would be prorated over the other cases where the year's growth at center of canker has been determined and but few or none of them are for years earlier than those already recognized on the plot.

"No attempt was made to determine the number and kind of cankers on trees killed by Blister Rust because of the fact that while this is possible with some trees, it is not possible with the majority. Since it was impossible to determine the year trees had died from Blister Rust on plots where no previous records had been taken the height of dead trees was not recorded on some of the plots, whereas, on other plots it was. Notwithstanding the fact that it is not correct to include trees killed by Blister Rust within the height classes of living trees it appears worthwhile in the future to take the height of all trees so killed, as a record of the height class to which they belonged when killed, and thus secure a record of the height classes in which trees most commonly succumb to the disease.

"In establishing the Pine Study Plots the square chain (0.1 of an acre) is used as the unit area; the same unit is used also in analyzing the data. With the exception of the Teal Lake Pine Infection Plot, where the number of trees per square chain did not justify it, the data have been analysed for each square chain and then summarized for the plot. In general three analyses have been made (1) Tree analysis, arranged by "year's growth first infected", (2) canker analysis arranged by "year's growth first infected", and (3) tree and canker analyses according to height classes of trees examined. Data given in these three types of tables constitute the basis for determining the progress and severity of the blister rust disease in the various localities studied.

"Since it requires from one to two years following initial infection in the pine needle before the incipient canker becomes evident on the twig or stem growth at the base of the fascicle, the number of cankers on any year's growth does not indicate the number of infections taking place that year. In the eastern white pine, Pinus strobus, L., infection in any given year might take place over from one to three (commonly two) years growth depending upon the length of time the needles are retained by any individual tree. Since needles more than two years old are less likely to be retained long enough for infection to reach the stem, needles two years old or younger are potentially more dangerous as infection sources for the pathogens, and it therefore, follows that the year of the intensive infection may differ by about one year from that on which the infection originated. In Pinus strobus a wave of heavy infections commonly results in a large number of infections on that year's growth, a somewhat lesser number on the preceding year's growth, and a decided drop in number of infections on the succeeding older year's growth. Based on this fact, the year of infection waves may be identified from data taken, as in the case of the New Hope Pine Infection Study Plot infection waves are evident in 1931 and 1938.

"The studies reported here have not included a detailed study of cankers themselves beyond the classification as to stage of development. Thus the rate of mycelial growth and spread within the cortex tissue, height and position on tree and other canker details have not been approached.

"Table I gives general data on the White Pine Infection Study Plots established and studied in the North Central Region in 1935. Following this general table each plot is discussed under its own heading in more detail.

Form No. I.

Pine Infection Study

Name of area ______ Location ______ County ______ State ______

T. ____ R. ____ Sec. ____ Inspected by ______ Date ______

						Cankers								
St.	Tr.	Pine No.	Hght.	Year ndls brne	Inf.	Yr.	First symp.	Juv.	First Pycnia	Pyc. scars	1st aecia	2nd aecia	Fr.sea. times	Dead

Form No. II.

PINE INFECTION STUDY

Name of Area _____ Location _____ County _____ State _____

T._____ R._____ Sec. _____ Inspected by _____ Date _____

Explanation: "Crown Class": D-dominant; I-intermediate; S-suppressed. "Dead or Infected": Dead from B.R., or Dead not from B.R.; "Infected"; Yes, or No. "Incipient cankers" are young cankers prior to production of pycnia; "Pycnial Scars" refer to pycnia produced more than once. Erad.Job No._____ Date Erad._____

		Trees					Cankers								
St.	Tr.	Pine No.	Hght. in feet	Crown Class	Side with most Inf.	Dead or Inf.	Year's growth at canker center	Incipient	First pycnia	Pycnial scars	First aecia	Aecia more than once	Dead	Totals	Cankers causing flags

Form No. III.

_____ PINE INFECTION STUDY PLOT

T.____,R.____,Sec._____"40"_____

County_____ Township _____

Owner:_____ Address:_____

Strip _____ Transect_____

	A	B	C	D	E	F	G	H	I	J
I										
II										
III										
IV										
V										
VI										
VII										
VIII										
IX										
X										

Ribes type:_____ Mapped by_____

Legend

Date Mapped_____

White pine designated by tree number.
Ribes species designated by first or first and second letters of species name.
Location to square milacre designated by coordinates:
Abscissa by capital letters - Ordinates by Roman numerals.
Scale : 5 inches = 1 chain.

B.R.C.-Pine Inf.S.P.Map Sheet 6/5/36.

Form No. IV.

RIBES INSPECTION

on ______________________________ Pine Infection Study Plot.
T. _______, R. _______, Sec. _______, [illegible] / ___ County ______________________ Township ______________
Owner __________________________________ Address ______________________________________

Location				Ribes species	No. Bushes		F.L.S.	Infection					Amt. shade [illegible] milacre in tenths
								% leaves inf.	% Inf. per Inf. leaf	% Inf. Surf[illegible]			
St.	Tr.	Ordinate	Abscissa		Examined	Infected				Uredinia	Telia	[illegible] Areas	

Crop (1) Variety	Owner	Size of plot in acres	Date plot harvested	Date other production data	Number times harvested	% Times infected	% Crop infected	Year of Launch	Number years tested	Gen. No. Parent seed	Gen. No. Foundation seed	Other sources possible distrib responsible for (a) contamination (b) heterogeneity	% owner's production sold	% farmers grower, other	% farmers taken advice
Sweet Lime	Kirthigam	1.5	12/05/94	G.S.C. 1990 with 1994	2nd	17.7	5.1	[illegible]	(1988)**	1988	1.0	5.0	(a) and (b) S. algerus	100.0	0	0
Red Lime	Gangadhar	1.0	16/06/94	G.S.C. 1990 with 1993	4th	11.0	4.7	[illegible]	(1989)	1989	3.0	3.2	(a) and (b) S. algerus	88.0	3.7	4
Chef Cricket	Gangadhar	4	12/05/94	G.S.C. 1990 with other G.F.D.	11th	70.0	15.7	[illegible]	(1988)	1987	4.0	4.2	(a) and (b) S. algerus	86.7	7.1	2*
Orlando	Gangadhar (1) Kirthigam		14/06/94	Not 1994	1st	31.0	1.0	[illegible]	1989	1985	5.4	5.7	(a) and (b) S. algerus	100.0	0	0
Three Crops	Indiamu	0.5	10/05/94	G.S.C. 1990	1st	41.0	[illegible]	[illegible]	1989	1986	18.0	5.2	(a) and (b) S. algerus	100.0	0	0
Orlando	Gangadhar	0.5	10/05/94	Not 1990	3rd	20.0	[illegible]	[illegible]	1988	1983	8.0	5.2	(a) and (b) S. sphaerus	100.0	0	0
Tangerine Grand	Gangadhar	0.5	10/05/94	Not contrast	4th	19.0	[illegible]	[illegible]	1988	1981	5.8	5.1	(a) and (b) S. sphaerus	100.0	0	0
Red Prue	Ponnagar	0.5	[illegible]	G.S.C. 1990 1993	1st	19.0	5.1	[illegible]	1988	1986	1982	6.5	5.04	(a) and (b) S. sphaerus	100.0	0	0
Total	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]					[illegible]	[illegible]			

*Inoculum possibly coming from wild Citrus not eradicated.

**Brackets ( ) placed around year indicates that the grower's [illegible] not be considered for varietal comparison but for this reason a slight possibility exists [illegible] may have occurred on close growth.

[illegible]

Summary of 1962 Data for Region

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

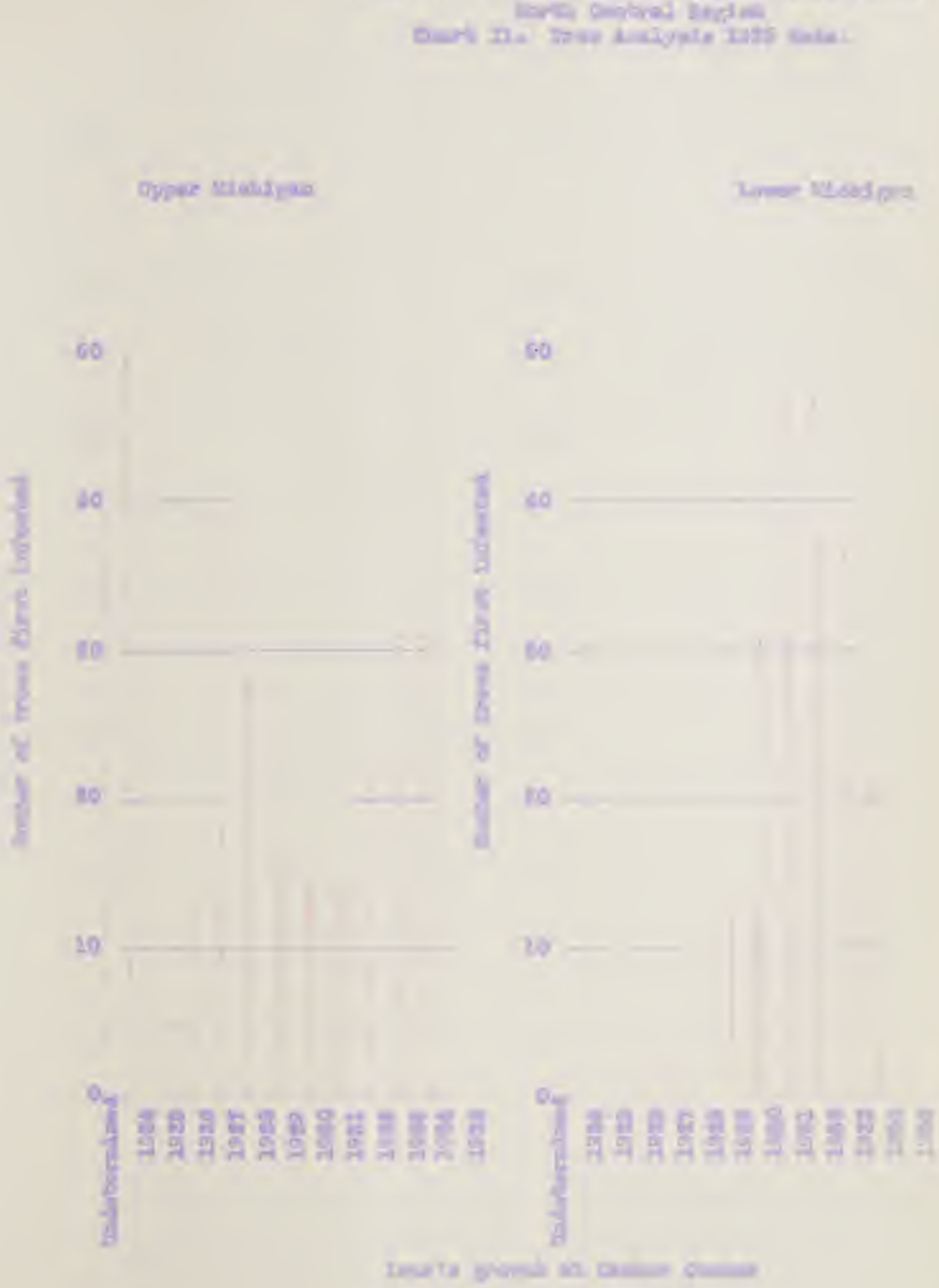
[illegible]

"At the annual St. Louis meeting of the American Phytopathological Society (Dec. 1956) Dr. E. C. Stakman presented a paper setting forth a mathematical method of analyzing the progress of infection, based on the equation formulated by Vanhalle for the study of human populations, in which he used White pine blister rust as one example. Using the data presented as a preliminary report before the annual meeting (Nov. 1956) of the Blister Rust Control Personnel for the North Central Region, Dr. Stakman charted progress of infection for each of the eight Pine Infection Study Plots established in this Region according to the equation. These charts are included with the data of each pine plot. Dr. Stakman also drew the curves showing the "relation of percentage of infected trees to the total carriers" (See Chart V). The final data submitted in this report differ slightly from those presented at the annual meeting in November but it is crucial that these differences will alter the charts prepared by Dr. Stakman but very little. Dr. Stakman's paper introduces a convenient method to determine (1) the rate of increase or progress of infection (represented by r in the logistic curve) (2) the extent of the gradual suppression of or decrease in the fungus population (modified k or time factor in the population equation), and (3) the effect of the distribution of hosts in a given environment. It is hoped to make use of this method of analysis with data secured in the future. Dr. Stakman has made the preliminary statement, based on data from the North Central Region, that "the rate of increase in all the areas was very small, indicating that the plots of pine trees in the Central States reach 50% infection about 6 years after the 1% infection mark, that they may be expected to reach about 90% infection some 10 or 12 years after the 1% infection stage. There was, however, no indication that these results mean." Dr. Stakman also points out that "the critical one per cent infection, of course, in any one area depends considerably on climate and the number of highly susceptible Ribes in the vicinity. Once the forest stand has reached the 1 per cent infection condition, however, it is clear that Ribes eradication must be undertaken immediately or such a few years elapse before half the trees are diseased." In this connection Dr. Stakman notes that, "the percentages given in the above statements relate to the actual date of infection and not to the date when the cankers are discovered. If we allow 2 years for the cankers to reach a stage where they can be seen, that would mean that, about 8 years after cankers can be seen on 1 per cent of the trees, half of the stand would be infected unless the Ribes had been eradicated."

"It is planned to continue observations on these Pine Study Plots in the future. In particular the location, size and number of all Ribes bushes on and near the plots will be taken, in order to evaluate the effect of such Ribes on the intensification of the disease on white pine trees on the study plots.

"Studies are also planned to shed more light on the effect of Ribes bushes in escape in intensifying the disease on adjacent white pines of various distances from centers.

"Another study planned is the effect of a spray for select Ribes in preventing blister rust to white pines in the immediate vicinity.


Upper Michigan
Lower Michigan
Number of Trees Firm Inbounded
Number of Trees Firm Inbounded
60
40
20
0
Indefinite
1984
1979
1978
1967
1966
1965
1960
1961
1958
1964
1963
Indefinite
1984
1979
1978
1967
1966
1965
1960
1961
1958
1964
1963
Insects growth at Season Changes

WHITE PINE BLISTER RUST INFECTION STUDY PLOTS
North Central Region
CHART III. Center Analysis 1955 data.

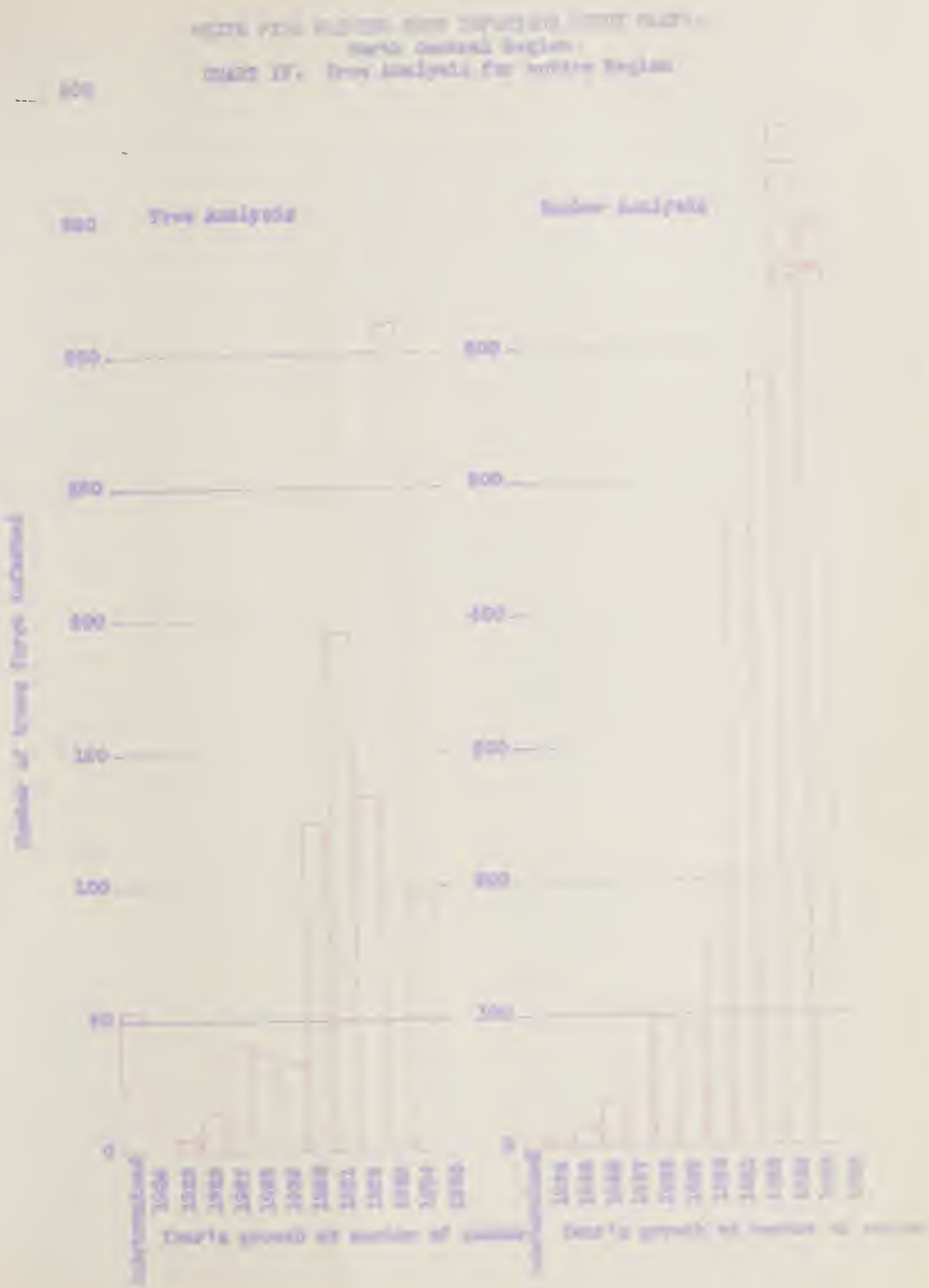

Tree Analysis
Number Analysis
Table of Long Form Schedule
Growth of number of members
Growth of number of families

CHART V.

RELATIVE OF PER CENT OF DOMESTIC TREES TO TOTAL CANKERS IN NORTH CENTRAL REGION
Dr. Hepp's March 16, 1956 Data, Plotted by Dr. E. B. Fraeser, Copied by D.E.S.

Upper Michigan

a. Deer Lake, Dickinson Co.	292 Trees	18% Infected	
b. Calumet (Pt.) Houghton Co.	108 "	70 % "	
c. Stolen, Marquette Co.	118 "	58% "	
d. Peal Lake " "	496 "	10.3% "	

Lower Michigan

e. Starr Estate, Leelanau Co.	183 Trees	16.9% Infected	
f. Anthony, Newaygo Co.	225 "	18.4% "	
g. Tamarack Creek, Newaygo Co.	45 "	27.2% "	

Wisconsin

h. New Hope, Portage Co.	1416 Trees	46% Infected

Table Four (1) — [illegible] Infection Study Plots
[illegible] Region.

Table 11. Shoot [illegible] First Recorded [illegible]

Twigs showing signs of [illegible]	Shoot Flushes: Terminal		Lateral		Other Flushes		Combined		Total		Shoot Flushes: Terminal		Lateral		Other Flushes		Combined		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
[illegible]	8	11.4	7	18.0	37	12.3			52	[illegible]	1	0.1					2	0.7	63	11.8
1958	0	0.0	0	0.0	0	0.0			0								0	0.0	0	0.0
1959	2	4.0	1	1.8	4	1.3			7								0	0.0	8	1.5
1960	9	12.8	2	12.1	0	0.0			11				1	0.3	1	0.2	7	2.1	10	2.0	1	0.1	11	2.0
1961	16	22.8	12	22.1	12	18.0			40				0	0.0	0	0.0	0	0.0	28	5.4	2	0.2	30	5.6
1962	14	20.0	10	18.2	2	0.6			26				0	0.0	0	0.0	0	0.0	26	4.1	2	0.2	28	5.2
1963	7	10.0	2	3.6	2	0.6	2	0.6	13		1	10.0	3	0.9	0	0.0	28	7.2	32	6.0	3	0.3	34	6.3
1964	1	1.4	0	0.0	0	0.0	12	3.6	14		1	10.0	49	36.9	4	12.8	24	50.0	83	21.8	77	12.1	164	21.0
1965			4	7.4	0	0.0	10	3.0	14		1	10.0	43	32.7	2	6.4	47	50.0	91	23.9	104	16.3	195	20.0
1966			2	3.8	2	1.8	27	8.2	31		1	30.0	14	10.8	4	12.8	27	28.0	56	14.7	73	11.4	129	13.2
1967							92	27.5	92		1	10.0	12	9.2			32	33.0	45	11.8	289	45.4	334	34.3
1968							1	0.3	1		1		0	0.0			2	2.0	2	0.5	85	13.3	87	8.9
1969							0	0.0	0				0	0.0			0	0.0	0	0.0	0	0.0	0	0.0
Total shoots infected	56	100	34	100	58	100	95	100	243		10	100	100	100	12	100	194	100	382	100	636	100	1018	100
Shoots killed by S.D.	1		28		16		2		47		0		8		0		3		29		34		66	
Total shoots affected	55		6		42		93		196		10		110		12		191		353		602		1152	
Shoots dead after recovery	0		0		0		0		0		0		0		0		0		36		0		36	
Shoots without symptoms	204		408		58		62		732		0		60		87		198		293		684		1057	
Total shoots examined	260		414		114		155		1928		10		171		99		389		1682		1286		2209	
Shoots not high in number	0		0		0		0		0		0		20		0		20		67		85		152	
Grand total shoots	260		242		112		155		1928		10		151		99		369		1615		1201		2057	
% shoots infected	21.2		11.0		50.9		72.0		26.0		20.0		90.1		87.8		52.6		47.8		50.1		50.4	
% shoots killed by S.D.	1.1		2.7		14.0		4.7		2.4		0.0		1.0		0.0		0.0		4.1		5.1		3.1	
% total shoots affected	20.0		1.7		44.1		77.7		23.2		20.0		91.1		87.8		43.3		47.7		49.3		45.4	
% shoots dead after recovery	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		2.2		0.0		0.0	
% shoots without symptoms	78.8		98.3		50.9		40.0		76.8		100.0		48.9		12.2		52.7		18.1		53.0		54.6	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Average per Bearer infected [illegible]	1.0		2.0		4.0		3.4		2.1		10.0		4.8		2.3		4.8		4.9		4.8		4.8	
Average per Bearer affected [illegible]	0.8		0.8		1.1		2.3		0.9		0.1		4.0		1.1		2.1		1.4		4.04		1.7	
Size of shoot (sq.cm.)	10		12		8		10 (to [illegible])				1		5		2		11		9		2		6.0	

Table 12. [illegible] growth infected on Flushes Shoot Infection Study Plots.

Twigs showing signs of [illegible]	Shoot Flushes: Terminal		Lateral		Other Flushes		Combined		Total		Shoot Flushes: Terminal		Lateral		Other Flushes		Combined		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
[illegible]	1	0.1					2	0.7	63	11.8							0	0.0	0	0.0
1958							0	0.0	0	0.0							0	0.0	0	0.0
1959							0	0.0	8	1.5							0	0.0	0	0.0
1960			1	0.3	1	0.2	7	2.1	10	2.0	1	0.1					0	0.0	1	0.1
1961			0	0.0	0	0.0	0	0.0	28	5.4	2	0.2					0	0.0	2	0.2
1962			0	0.0	0	0.0	0	0.0	26	4.1	2	0.2					0	0.0	2	0.2
1963	1	10.0	3	0.9	0	0.0	28	7.2	32	6.0	3	0.3					0	0.0	3	0.3
1964	1	10.0	49	36.9	4	12.8	24	50.0	83	21.8	77	12.1					0	0.0	77	12.1
1965	1	10.0	43	32.7	2	6.4	47	50.0	91	23.9	104	16.3					0	0.0	104	16.3
1966	1	30.0	14	10.8	4	12.8	27	28.0	56	14.7	73	11.4					0	0.0	73	11.4
1967	1	10.0	12	9.2			32	33.0	45	11.8	289	45.4					0	0.0	289	45.4
1968	1		0	0.0			2	2.0	2	0.5	85	13.3					0	0.0	85	13.3
1969			0	0.0			0	0.0	0	0.0	0	0.0					0	0.0	0	0.0
Total shoots infected	10	100	100	100	12	100	194	100	382	100	636	100					0	0.0	636	100
Shoots killed by S.D.	0		8		0		3		29		34						0		34	
Total shoots affected	10		110		12		191		353		602						0		602	
Shoots dead after recovery	0		0		0		0		36		0						0		0	
Shoots without symptoms	0		60		87		198		293		684						0		684	
Total shoots examined	10		171		99		389		1682		1286						0		1286	
Shoots not high in number	0		20		0		20		67		85						0		85	
Grand total shoots	10		151		99		369		1615		1201						0		1201	
% shoots infected	20.0		90.1		87.8		52.6		47.8		50.1						0.0		50.1	
% shoots killed by S.D.	0.0		1.0		0.0		0.0		4.1		5.1						0.0		5.1	
% total shoots affected	20.0		91.1		87.8		43.3		47.7		49.3						0.0		49.3	
% shoots dead after recovery	0.0		0.0		0.0		0.0		2.2		0.0						0.0		0.0	
% shoots without symptoms	100.0		48.9		12.2		52.7		18.1		53.0						0.0		53.0	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]						[illegible]		[illegible]	
Average per Bearer infected [illegible]	10.0		4.8		2.3		4.8		4.9		4.8						0.0		4.8	
Average per Bearer affected [illegible]	0.1		4.0		1.1		2.1		1.4		4.04						0.0		4.04	
Size of shoot (sq.cm.)	1		5		2		11		9		2						0.0		2	

[illegible] Time of Shoot [illegible]

*Leaves not [illegible]

White Pine Blister Rust Infection Study Plots
[illegible] Central Region.

Table III. Summary of cankers [illegible] different year's growth at center of basket.

Year's Growth at Center Center	Upper Michigan: Deer Lake No.	%	Twel Lake No.	%	Gilf Stating No.	%	Calumet No.	%	Totals No.	%	Lower Michigan: Short [illegible] No.	%	Indiana No.	%	Tawas[illegible]** Creek No.	%	Totals No.	%	Michigan Totals For State No.	%	Wisconsin Tow Lops No.	%	Region Total No.	%	Region Number Cankers per 100 Basal Trees*
Indetermined	8	8.6	18	12.7	104	41.3			128	14.6							1	0.1	129	5.6			129	5.70	12.1
1984	0	0.0	0	0.0	6	1.6			6	0.8									3	0.8			3	0.08	0.7
1985	1	1.1	1	0.1	16	6.0			17	2.0									17	0.0			17	0.04	1.0
1986	13	14.0	9	6.2	7	2.8			29	3.3			1	0	1	2.9	2	0.1	31	1.2	2	0.07	33	0.90	3.8
1987	25	26.9	28	20.2	61	20.6			174	19.0			0		0	0.0	0		174	6.4	1	0.04	175	6.22	17.0
1988	32	34.5	39	44.6	34	13.7			96	11.1			0		1	2.9	1	0.1	97	3.1	3	0.09	94	4.11	9.5
1989	16	17.2	16	12.7	22	8.7	2	0.9	55	6.3	2	0.9	24	0.0	0	0.0	26	2.6	84	4.4	21	0.60	10	5.00	9.1
1990	4	4.3	1	0.8	18	6.2	14	5.4	38	5.7	1	0.1	36	13.9	2	5.9	67	6.4	99	5.2	101	2.89	207	6.41	16.0
1991			4	3.0	4	1.6	32	5.4	40	2.6	14	1.2	170	35.7	22	62.6	210	60.0	240	16.2	281	8.18	487	10.00	41.0
1992			1	0.8	1	0.3	83	14.7	85	5.6	306	27.1	111	23.6	5	20.0	382	30.6	404	21.0	192	6.34	590	11.26	29.5
1993							266	46.0	266	20.5	196	16.2	70	14.8	2	8.7	268	35.7	545	28.6	1181	40.96	1726	27.61	149.2
1994							64	3.8	64	2.0	16	1.0	47	9.7			63	4.2	47	2.4	1112	10.25	1160	25.50	115.3
1995							0.0				0.0		0	0.0			0		0		0	0.0	0	0.00	0.0
Total	97	100	110	100	[illegible]	100	116	100	[illegible]	100	[illegible]	1.0	470	100	32	100	1920	100	1910	100	2771	100	[illegible]	100	[illegible]
Size of plot. (sq.rd.)	75		10		4		15(in length) 45				2		5		5		12		87		6		93		
Sites	R. nigrum		R. nigrum		R. nigrum		R. nigrum				R. nigrum		E. cynosbati								E. cynosbati				
Age	wild spp.		wild spp.		wild spp.		wild spp.																		
No. baskets							75 adjoining open or distance						192		114						1083				
Sites F.T.D.													2004		1968						1976%				

*Total number sampled trees = 1046.

**Region not [illegible]

Table from Winter [illegible] in Infection Study Plots, [illegible] Trial Region.

Table IV. Tree and Cone [illegible] according to Height Classes.

Height Classes	Lower Michigan: Trees examined No.	%	Trees infected No.	%	Total cankers No.	%	Average No. cankers per infect. tree	Average No. cankers per exam. tree	Lower Michigan: Trees examined No.	%	Trees infected No.	%	Total cankers No.	%	Average No. cankers per infect. tree	Average No. cankers per exam. tree
Regeneration	76	7.8	0	0.0	0	0.0	0.0	0.0	-	-	-	-	-	-		
0.1-2.0	313	31.6	36	14.6	70	8.1	2.0	0.2	91	27.0	21	27.3	107	20.1	5.1	1.2
2.1-4.0	194	19.7	69	28.0	270	31.2	3.9	1.4	49	14.5	21	27.3	157	29.5	7.5	3.2
4.1-6.0	175	17.7	39	15.8	90	10.4	2.3	0.9	38	11.2	13	16.9	183	34.4	14.1	4.8
6.1-8.0	100	10.0	22	8.9	59	6.8	2.7	0.6	30	8.9	14	18.2	90	16.9	6.4	3.0
8.1-10.0	31	3.1	14	5.6	45	5.2	3.2	1.4	18	5.3	7	9.1	50	9.4	7.1	2.8
	All height classes below examines to strike root height only.															
10.1-12.0	22	2.2	8	3.2	14	1.6	1.8	0.6	7	2.1	5	6.5	20	3.8	4.0	2.9
12.1-14.0	2	0.2	2	0.8	14	1.6	7.0	7.0	1	0.3	1	1.3	2	0.4	2.0	2.0
14.1-16.0	22	2.2	17	6.8	72	8.3	4.2	3.3	14	4.2	6	7.8	49	9.2	8.2	3.5
16.1-18.0	13	1.3	9	3.6	40	4.6	4.4	3.1	7	2.1	3	3.9	15	2.8	5.0	2.1
18.1-20.0	2	0.2	2	0.8	6	0.7	3.0	3.0	14	4.2	5	6.5	106	19.9	21.2	7.6
Over 20 feet	5	0.5	8	3.2	36	4.1	4.5	7.2	33	9.9	11	14.3	220	41.3	20.0	6.7
Height unknown	8	0.8	0	0.0	0	0.0	0.0	0.0	1	0.3	0	0.0	0	0.0	0.0	0.0
Killed by R.C.	44	4.4							2	0.6						
Dead other causes	18	1.8							3	0.9						
Total examined	1000	100	240		864	100	3.6	0.9	339	100	134	100	1049	100	7.8	3.1
Too high to examine	8 (= 0.5 of Grand total)								46 (= 12.6% of Grand total)							
Grand Total	1007	-	240	100	864	100	3.6	0.9	410	-	134	100	1049	100	7.8	3.1

Height Classes	Wisconsin: Average No. trees per exam. area	Trees examined No.	%	Trees infected No.	%	Total cankers No.	%	Average No. cankers per infect. tree	Average No. cankers per exam. tree	North Central Region: Trees examined No.	%	Trees infected No.	%	Total cankers No.	%	Average No. cankers per infected tree	Average No. cankers per exam. tree
Regeneration	-	-	-	-	-	-	-	-	-	76	2.9	0	-	0	-	-	-
0.1-2.0	1.4	496	38.0	128	39.3	265	40.00	2.07	1.17	905	34.3	270	37.8	720	17.1	2.7	0.8
2.1-4.0	2.3	407	31.2	129	39.6	1125	49.50	8.72	2.76	668	25.3	319	44.7	1652	39.3	5.1	2.5
4.1-6.0	4.2	351	26.9	100	30.7	846	36.10	8.46	2.41	484	18.3	283	39.6	1197	28.5	4.2	2.4
6.1-8.0	5.3	79	6.1	41	12.6	139	5.9	3.39	1.76	216	8.2	89	12.5	296	7.0	3.3	1.4
8.1-10.0	5.1	16	1.2	8	2.5	2	0.01	1.00	0.13	66	2.5	24	3.4	100	2.4	4.2	1.5
10.1-12.0	5.6	9	0.14	1	0.3	1		1.00	0.5	18	0.7	14	1.5	40	0.9	2.9	1.2
12.1-14.0	5.8	1	0.1-					0.0	0.0	37	1.4	23	3.2	100	2.4	4.3	2.5
14.1-16.0	1.0	0	0.0					-	-	20	0.7	12	1.1	31	1.2	2.6	2.1
16.1-18.0	5.7	1	0.1-					0.0	0.0	20	0.8	6	0.8	106	2.9	17.0	5.9
18.1-20.0	9.1	0						-	-	37	1.4	17	1.6	246	5.8	14.5	6.6
Over 20 feet	0.0	-						-	-	9	0.3	0	0.0	0	0.0	0.0	0.0
Killed by R.C.		20	3.1							95	3.8						
Dead other causes		8	0.5							26	0.8						
Total examined	3.1	1,280	100	657	100			4.36	2.01	2719	100	1046	100	4692	100	4.5	1.7
Too high to examine		55 (= 8.5% of Grand total)								100 (= 4.3% of Grand total)							
Grand Total	3.1	1,335	-	657	100	1779	100	4.20	2.01	2819	-	1046	100	4692	100	4.5	1.7

"Permanent Ribes Regeneration Study Plots (1956)"
North Central Region
Introduction and Purpose

"At the 1955 meeting of the Supervisory Personnel of the North Central Region, Mr. Tubesa outlined the general procedure for the establishment of Permanent Ribes Regeneration Study Plots and encouraged the establishment of these plots in the North Central Region. With these suggestions, the various state leaders within the Region initiated plots, which at the close of 1956, totalled 175 in number. A few other plots established were discarded as unsatisfactory for one or more reasons.

"The primary purpose of these plots is to determine the effectiveness of the control program, namely, control by the eradication of species of Ribes. To accomplish this purpose Ribes Regeneration plots were established in order to secure quantitative data concerning Ribes regeneration in the various types of environments included within Eradication Set areas following the completion of typical Ribes Eradication by crews. The environments studied are classified according to "Ribes-types" given below and the analysis is by Ribes species within these Ribes-types. From common experience it is known that crews normally reduce the Ribes population regardless of the original amount of Ribes, to a more or less common level, but that they normally leave some Ribes bushes, sprouts, or seedlings. The maximum feet of live stem per acre permitted for satisfactory eradication is 25 P.L.S. per acre. A more rigid standard would greatly increase the cost of eradication and in many cases would make Eradication of Ribes by new possibilities. In disturbing the soil and ground cover or duff during the process of crew work, seeds in the soil previously dormant may be disturbed and stimulated to germinate and produce many seedlings. Thus following crew work, chance bushes and regeneration from living stems or overlooked sprouts or seedlings may raise the feet of live stem per acre above that believed to be safe for the protection of white pine against Blister Rust. These plots should also give information regarding the most effective time for annual Ribes Eradication for the various Ribes types in the Region. The time for future Ribes eradications will depend upon the amount of missed bushes, the rate of sprout regeneration from stems or crowns, and the number of seedlings coming in and surviving subsequent to the initial eradication and it should provide the production of seed by any missed or regenerated bushes. Other factors besides the missed bushes, sprouts or seeds also affect the rate of regeneration for ecologic conditions may generally tend to suppress or increase the Ribes populations. The character and amount of the over-story, and the under-story, the ground cover, the kind of soil and the amount of shading, etc., in addition to the effect of cutting, burn, grazing, insect injury or other disorder constitute some of the factors influencing regeneration.

Ribes Types in the Region

"The Ribes Regeneration Study Plots are established prior to the initial Ribes Eradication in order to secure data on the original Ribes content on the different Ribes-types prior to the application of control measures. By "1st Eradication" (see "Ribes Eradication") is meant the first Ribes eradication given the area after the establishment of the Study Plot.

is a very low-grade fiber representing stump flora very long established in large cleared area, years in the past but where the production was either not satisfactory or recognition has increased the risk of fire to the point that it has become worth while to establish a plot in the area in the character in that territory. Such plots are, as a rule, in natural fiber heights. In fixed cases any previous fiber production should be recorded in the description under "History of Area" rather than as the "1st Irradiation." The location of these plots is not made known to the crews performing the fiber irradiation since such knowledge might influence the character of their work and typical fiber irradiation not secured on the plots. There possible, following the first fiber irradiation a second inspection is made the same year to determine the fiber content shortly following such irradiation. Data of similar type are secured each year thereafter for several years following the initial irradiation. Some species of fiber are more readily irradiated than others because of their size, habit of growth, state of foliation or defoliation and character of wood or bark, etc. Information regarding irradiation hazards caused by such fiber characteristics should be forthcoming. To facilitate uniformity and economic issue forms have been prepared for recording data. (See Form Nos. I, II, and III.) These consist of (1) a "First sheet" for recording the plot number, the location, the fiber type, dates and stages of the irradiations, irradiation (by crews), the inspectors, and the information pertinent to the number of fiber counts and fiber growth, etc. (See Form No. I); (2) a "Continuation sheet", for continuing the data on any one plot (See Form No. II.); and, (3) a "Map Sheet." (See Form No. III.) The directions for use of these blank forms is given below.

Selection of Location

The location for a fiber representation study plot should be made within an irradiation job area which has not previously been worked and in which fiber irradiation will be performed later (in the not too distant future). The plot selected should be typical of the fiber-type in that area. For our purpose, the fiber-types express not only fiber conditions but also timber-types. It should not be placed in an area in which fiber irradiation will not be performed nor in the middle-ground of a forest canopy in which white pine seedlings are grown. Thought should be given to accessibility for future inspection and care used in the plot location into permanent landmarks such as section boundaries, quarter-lines, roads, fences, streams, etc.

The plot should be representative of the areas in which irradiation is to be done. The tendency is to locate such plots where fibers are quite abundant in each type in order to have present fiber growth for study. However, it is desirable to have plots in the different fiber-types with varying densities of both fibers and brush.

Size of Plot.

Fiber representation Study Plots may vary in length from 1 chain up to 2 or more. In types (such as D) where fibers are less abundant larger study plots are desirable. Where density of fibers is more concentrated (as type A) plots of 1 chain length are adequate. All plots should be 16.5 feet (1/5 chain) in width. Thus, a plot 2 chains long contains 33 milacres. (1 milacre = 1/640 sq. feet or 1/43.560 acre). A 20 milacre plot represents a fifteenth of an acre.

Procedure in Establishing Plot

After selecting the location for the 10ha Study Plot a surveyor's stake (or more, in case a stake is not available) is pinned along the central axis of the plot and a stake driven in the ground at each end (10 feet apart); then at intervals of 10.2 feet (= 50 links) somewhat smaller stakes are driven in. This will require 6 stakes for each chain length plot established. These six stakes are to permanently locate the plot and should be labelled. The following labels are suggested: At the beginning of the plot, stake number 1 is labelled, "Start Plot No.___" (insert the number of the plot for that county or district); stake number 2 is labelled "0.2"; stake number 3 is labelled "0.4"; stake number 4 label "0.6"; stake number 5 label "0.8"; stake number 6 label "1.0". (See the top of the Permanent Plot Representative Study Plot map sheet, Form No. [illegible])

"If the plot is continued to greater lengths continue the stake labelling as follows. Stake number 7 label, "1.2"; stake number 8 label "1.4"; etc. This labelling is important for identification of each sitem, in recording the data on the original inspection, and for reporting data at all future inspections. It is also important, in case any of the permanent stakes should be lost, for the reconstruction of the plot. The numbers or fractions placed on the stakes represent the fraction of the chain and in recording the sequence of sitem numbers and the direction of the plot given at the bottom of the "Map Sheet" it will be noted that the number on the stake is always westerly (left) of the sitem preceding and to the left of it as further explained below. With the aid of 2 to 3 straight sticks (cut to a length of 6.2 feet each) the boundaries of each sitem may be quickly indicated (lay two sticks on the ground at right angles and the 3rd stick at their extremities parallel to the central axis marked by the surveyor's chain). After taking data on the first sitem the sticks may be readily moved along to each successive sitem to mark the boundaries and facilitate in the taking of the data.

"If so desired the outer boundaries running parallel and 6.2 feet to right and left of the central base line may be marked temporarily by string lines but all string lines should be removed after taking the data to avoid revealing the plot to the enumeration crew. Inconspicuous temporary stakes are frequently used until after the first enumeration, for the crew should not be negligent of the presence of the study plot, in order to insure crew work typical of the entire enumeration job.

Directions for Taking Data

"On the record sheets ("First Count", "Continuation Sheets", and "Map Sheets") record the data for each sitem's inventory using the sitem sequence given at the bottom of the "Map Sheet". Looking in the direction in which the plot extends (from the "start" stake) all sitems on the right side of the central axis or base line will be odd-numbered sitems (starting with 1) and those on the left side even numbers (starting with 2). The sitem number preceding and to the left of each stake is then represented by a number beside that on each stake label, which may be of assistance in identifying the particular sitem for future recount or in reconstructing the plot in case some of the stakes disappear from year to year. If the plot is 1 chain long the last sitem will be number 50; if longer continue the sitem numbering in the same sequence as 51, 52, 53, 54, [illegible] [illegible] [illegible]

ie not use "first sheets" for "continuation sheets". Do not fail to indicate the direction from and to which the plot rows and if not in the cardinal directions indicate the degree off of the cardinal direction thus making possible the future reconstruction of the plot if necessity so requires.

"The first inspection should give data regarding the natural or original Ribes situation before the area is influenced by Ribes Eradication Control measures. Subsequent inspections will yield data indicating the influence of Control Measures on Ribes population (slowed burden, new growth from stems, crowns or seed, etc.), whether the environment is accelerating or diminishing Ribes regeneration, and when eradication measures should be applied again.

"In making inspections subsequent to the first do not confuse original Ribes with Ribes regeneration from crowns, stems or seed. As a rule relatively few seedlings are encountered at the first inspection. If such are found and they are not large enough to justify calling a bush, they may be reported in the column headed "Remarks", but not under the column "Free seeds" under "Ribes Regeneration after Eradication". Likewise do not confuse "sprouts" of "original Ribes" with "sprouts" under Ribes Regeneration after Eradication". Study the Record Sheets well before recording. Record every milacre noting Ribes are present on the milacre or not; if no Ribes are present indicate the milacre number and zero in the spaces reserved for number of Ribes and F.L.S. Do not forget to record the amount of shade on each milacre. The milacres without Ribes should be examined on all future inspections for possible regeneration from scattered bushes, crowns or seed. If more than one species of Ribes occurs on a single milacre use a separate space, (each space allows for 5 inspections) for each species, and indicate in the proper place the same milacre number for all species on that milacre.

"Upon taking data at any inspection do not fail to remove any Ribes whether original or regenerated. To do so will defeat the entire purpose of the study. With respect to this mention, do not confuse the Ribes Regeneration Study Plots with the courses of removing bushes as formerly done in the systematic 2% check of completed Eradication jobs. The systematic 2% check of completed Eradication done is used to determine the F.L.S. left by the crew, the efficiency of the crew work, and whether the job will satisfactorily meet the arbitrary ceiling of 25 F.L.S. per acre allowed and be passed as completed or will need reworking. The small plots used in the Ribes Regeneration Studies are quite inadequate for such a use and have an entirely different purpose in view. There is no connection between the 2% check and the Regeneration Study Plots even though they may both be undertaken by the same person or persons. While working on the plot disturb the cover as little as possible. Disturbing the cover may greatly alter the local conditions from those natural to the area so that they are not comparable. The amount of light is an important factor with respect to regeneration. Therefore, record the amount of shade for each milacre (with or without Ribes), in any very considerably sized in the plot. Indicate the amount from complete shade (1.0) to completely open condition (0.0) in tenths of shade (See Table I).

"A description of the Ribes type indicating both Ribes density and the eradication hazard from brush density can be briefly indicated by following the symbols used in showing cover types on preeradication maps. For convenience these Ribes types, symbols for density of Ribes and brush are given below.(Table I).

Table 1. - Kibes types

No. of Type	Type	Character	Kibes species	Kibes tolerance
1	(Green type, cedar-hardwoods relict; Tamarack (black spruce	Water usually flowing, deep moss, loamy soil, much brush, wildlife, cedar, hardwoods, white pine scattering. A different, mostly conservation job usually. Grow work. Close formation.	R. sanguineum R. triste R. oxyacanthoides R. glandulosum R. cynosbati R. cynosbatoides R. hirtellum R. ebenoriensis	(Kibes tolerance (Very (hot (sun
2	(Swamp type (Muskeg	Water still, deep peat, dense growth, leather leaf, sedge, scattered dwarf black spruce. Snout or grow work at edges only.	R. glandulosum	(Very (hot (sun
3	(Upland type, (Hardwoods (White Pine	Dry land, medium dry, sandy loam to clay loam, good soils. Brush medium. Mixed hardwoods, white pines, open canopy-birch-white pine. Good white pine planting sites. Grow work.	R. hirtellum R. cynosbati R. cynosbatoides R. triste	(Close to (Grow
4	(Upland type, (Pine	Dry land, sand to sandy loam, brush light, jack pine, Banksian pine, white pine. Usually snout work.	R. triste R. cynosbati R. hirtellum	(Close to (Grow.
5	(Upland type, (Barren.	Dry land, open fields, pastures. Only very. Scattered hardwoods, white pine. Snout or grow work.	R. cynosbati R. hirtellum R. ebenoriensis R. ebenoriensis	(Close to (medium (Grow to (bushes
6	(Cultivated	Area in crops or pasture and not needing grow work except along fences, plows piles, etc.	None	(Grow

Amount of Shade: (recorded in tenths) full shade = 1.0; half shade = 0.5; quarter shade = 0.25; no shade or open = 0.0.

Density of Kibes

0 - No Kibes.
1 - Kibes scattered (1-20 per acre)
2 - Kibes few (20-100 per acre)
3 - Kibes medium (101-200 per acre)
4 - Kibes heavy (201-1000 per acre)
5 - Kibes very heavy (1001 or more per acre)

Brush Density

0 - No brush.
1 - Very light brush.
2 - Light brush.
3 - Medium brush.
4 - Dense brush.
5 - Very dense brush.

Cover type	[illegible]	[illegible]	[illegible]
[illegible] Cover Types			
[illegible] types			
[illegible] pine predominant	Pj	[illegible]	[illegible]
Norway pine "	Pp	[illegible]	[illegible]
White pine "	Pw	[illegible]	[illegible]
Balsam predominant mixed with pine	[illegible]	[illegible]	[illegible]
Spruce (with [illegible]) mixed with pine	[illegible]	[illegible]	[illegible]
[illegible] types			
Aspen predominant	[illegible]	[illegible]	[illegible]
White or paper birch	[illegible]	[illegible]	[illegible]
Oak predominant	[illegible]	[illegible]	[illegible]
[illegible] predominant mixed with hardwoods	[illegible]	[illegible]	[illegible]
Mixed hardwoods	[illegible]	[illegible]	[illegible]
[illegible] types			
Hazel brush	[illegible]	[illegible]	[illegible]
Mixed brush (alder, dogwood, pin cherry, highbush elder, serviceberry)	[illegible]	[illegible]	[illegible]
[illegible] land type			
[illegible] grass predominant	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	—	—
[illegible]	[illegible]		
[illegible] standing timber)	[illegible]	[illegible]	[illegible]
[illegible] types			
Tamarack predominant	[illegible]	[illegible]	[illegible]
Black spruce	[illegible]	[illegible]	[illegible]
Cedar predominant	[illegible]	[illegible]	[illegible]
Balsam "	[illegible]	[illegible]	[illegible]
Mixed hardwoods -(Black ash, [illegible])	[illegible]	[illegible]	[illegible]
[illegible] willow predominant	[illegible]	[illegible]	[illegible]
Tag alder (brush type)	[illegible]	[illegible]	[illegible]
Bog or dwarf birch predominant	[illegible]	[illegible]	[illegible]
[illegible] types (usually not necessarily treeless)			
Wild hay meadow	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Reeds	[illegible]	[illegible]	[illegible]
Cat tails	[illegible]	[illegible]	[illegible]
Cropped land	[illegible]	[illegible]	[illegible]
Hay meadow	—	[illegible]	[illegible]
Pasture land	[illegible]	—	[illegible]
Abandoned (former cropped land now lying abandoned.)	[illegible]	[illegible]	[illegible]

"Thus the following example 4A5 would indicate the cover type within which the Ribes Study Plot was located possessed heavy density of Ribes in a deep swamp and with medium brush. Where the regular U. S. Forest Service cover type symbols are in use (as on the National Forests) these symbols may be employed or may be transposed according to the following table. (Table II). The Ribes-type should be recorded on both the "first sheets" and "continuation sheets".

"In filling out the record at the top of the "First Sheet" designate the plot by number for the county or area, the county name, state and Ribes-type. Under "Established from" give the headquarters of the checker or supervisor in the county or area where the plot is established. This may be a CCC Camp and as plots may be established from more than one such headquarters in a county or area such a record is useful to determining the identity of the plot. The county is the unit used for the permanent numbering and filing of plots and this assists in keeping duplicate numbered plots separate. On a National or State Forest the Ranger District should be included. In giving the Township, Range and Section in which the plot is located include also, if possible, the "40". Under "Location" give the post office address of the city, town,village, CCC Camp or other geographical location from which one would initiate an inspection visit to the Study Plot. The direction from which the plot starts and to which it extends is important information and should be included in the proper blanks. The date and agency of Ribes eradication and Eradication Job No. should also be recorded. These eradications refer to only those eradications made after the establishment of the Study Plot. As stated elsewhere, should there have been any eradications previous to the establishment of the Study Plot, by chance,this should be recorded on the "Description Sheet" in connection with any points of Historic interest. The name of the inspector and the date of the inspection should be recorded.

"Before leaving the plot notes should be made on the "Description Sheet" (backside of "First Sheet"). These notes should give directions of travel from some known geographical starting point to the area in which the Ribes Regeneration Study Plot is located. They may indicate Federal, State or local highways and any side road or trails leading to the area with distances and directions.

"Following the directions to reach the area, give a brief statement of such local details which are necessary or helpful in locating the study plot (as section corners or lines, 1/4 or 1/8 section lines, streams, bridges, fences, telephone poles, pine stands or woodlots, trails, characteristic trees, stakes, etc.) Directions should be complete enough for an absolute stranger to readily go to the plot. The "Description Sheet" also provides space for any additional information available, such as ground cover, over-story, under-story, soil conditions, and previous history of the plot which might be significant regarding the Ribes population. Brief "Directions" for establishing Ribes Regeneration Study Plots are given at the top of the "Description Sheet", on the backside of the "First Sheet". A map (Scale 4 inches to a mile) should be made to supplement the above description (See"Map Sheet", Form III). This map may be made from a Pre-eradication survey map including those features which are pertinent to locating the Study Plot and sufficient to give an idea of the cover and ecologic conditions in and surrounding the plot. (Use cover-types).

Mil.BRC-10 (Rev.)
First Sheet
4-24-36

PERMANENT RIBES REGENERATION STUDY PLOT

Plot No.______ County __________ State __________ Ribes type________
Established from______________________________________
Location________________ T.____ R.______ Sec.______ "40"____
Length (ch.)______ Width_______ Direction:from_______ to_______
1st.Erad.:Date________ Agency________ Erad.Job No.________
2nd.Erad.:Date________ Agency________ Erad.Job No.________
3rd.Erad.:Date________ Agency________ Erad.Job No.________

Insp.	Inspector	Date
1		
2		
3		
4		
5		

Milacre No. and Ribes species	Inspection	Amount shade on milacre in tenths	Original Ribes		Ribes regeneration after eradication				Production of fruit after eradication		Remarks: Reason for bush survival, cover, brush hazard, etc.
					From seed		Sprouts*				
			No. bushes	F.L.S.	No.	F.L.S.	No.	F.L.S.	No. Racemes	Orig. bush seedling or sprout	
	1										
	2										
	3										
	4										
	5										
	1										
	2										
	3										
	4										
	5										
	1										
	2										
	3										
	4										
	5										
	1										
	2										
	3										
	4										
	5										

*Sprouts arising from crowns or stems.

(Directions: Establish plot in an area before initial Ribes eradication. Fill in all possible information on front sheet. Give T.___,R.___,SEC.___,"40"___. For "Location" give post office or geographical location natural to start from for inspection trip to plot. With "Ribes type" include symbol denoting Ribes concentration and brush density. Record all milacres whether Ribes are present or absent. Use separate horizontal space (each for 5 inspections) for different species and indicate milacre number for each. Do not use "first sheets" for "continuation sheets." Include date of Ribes eradication and agency and give the "Erad.Job.No." Follow the milacre number sequence given at base of map sheet. Give the direction from which and to which the plot extends. DO NOT PULL RIBES DURING OR AFTER ANY INSPECTION. Fill in the "Description Sheet" below as completely as possible, giving in a brief paragraph the details for reaching the area and plot from a known place. Include any details of "Ribes Type", plot coverage, or eradication hazard, soil, or history of significance in relation to the past or future Ribes population. Accompany the Description Sheet with map on map sheet. Any special hazard on milacres may be recorded under "Remarks". In all measurements use tenths (of feet or other amounts.) On map indicate cover types as well as roads, trails, etc. leading to plot.

DESCRIPTION SHEET

Owner or Area: _____

Address : _____

To Locate Permanent Ribes Regeneration Study Plot No. _____:

History of Area (Cutting,burn,grazing,insect injury,etc.):

Description of Cover on Plot:

Over Story:

Age Class:

% Stocking:

Under Story:

Ground Cover:

Soil:

Mil.BRC-10-A (Rev.)
Continuation Sheet
5-27-35

Form No. 11
PERMANENT RIBES REGENERATION STUDY PLOT (Continued)

Plot No.________ County________ State________ Ribes type________

Milacre No. and Ribes species	Inspection	Amount shade on milacre in tenths	Original Ribes		Ribes regeneration after eradication				Production of fruit after eradication		Remarks: Reason for bush survival, cover, brush hazard, etc.
					From seed		sprouts				
			No. bushes	F.L.S.	No.	F.L.S.	No.	F.L.S.	No. Racemes	Orig. bush seedling or sprout	
	1										
	2										
	3										
	4										
	5										
	1										
	2										
	3										
	4										
	5										
	1										
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	2										
	3										
	4										
	5										
	1										
	2										
	3										
	4										
	5										

Form No. III.

_____ COUNTY

_____
(state)

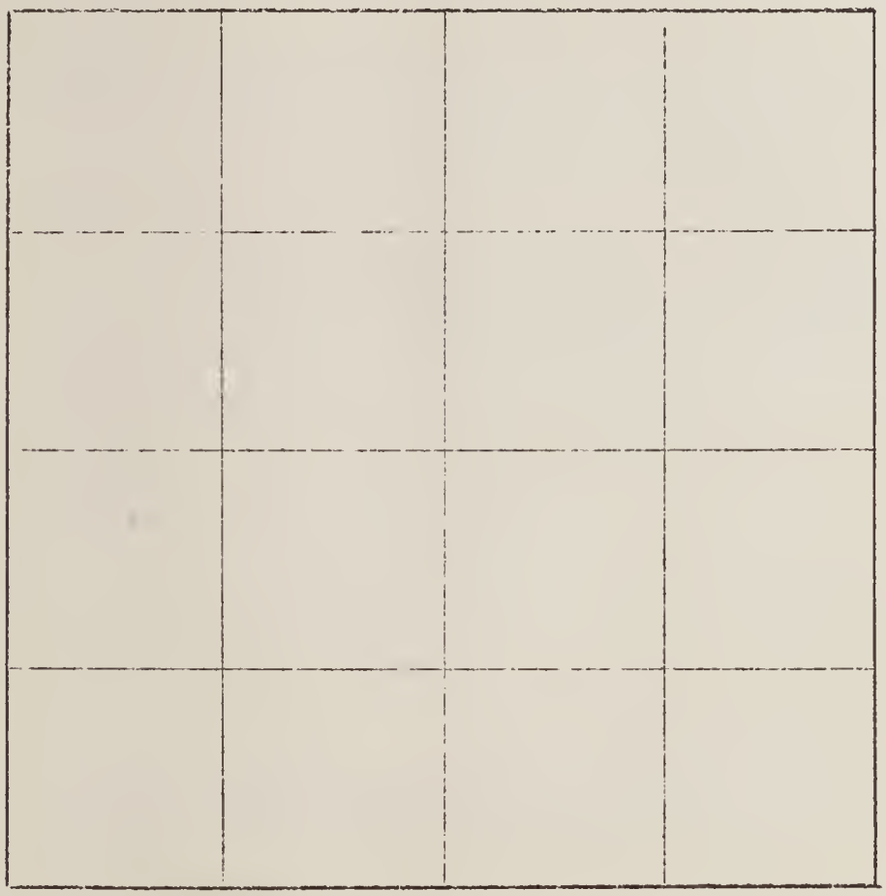
N
W E
S

PERMANENT RIBES REGENERATION STUDY PLOT NO._____

T._____ R._____ Section_____ "40"_____

Owner_____ Township_____

MAP (showing location and accessibility of plot) Scale 4 inches = 1 mile



Sequence of milacre numbering and direction of plot

	2	4	6	8	10	12	14	16	18	20	
←	O	X	X	X	X	X	X	X	X	C	→
(direction)	1	3	5	7	9	11	13	15	17	19	(direction)

STAKE LABELS:

Start
Plot No.___ 0.2 0.4 0.6 0.8 1.0
(direction)

Threatened Plant Conservation Study Plots
North Central Region

Data on Plots Established 1980.

Table 1 gives a statement of plots established during 1980 arranged by states in the North Central Region. A total of 105 plots were established of which 70 have had annual inspection.

Table 1. - Summary of Number and Location of Plots Plots, North Central Region.

State	Number of possible	Number of Plots Established by Plots Types					Number of Plots With Annual Inspection made					Plots Not Inspected
		P	S	L	O	Total	P	S	L	O	Total	
Michigan (Upper)	4	25	5			26	19	7			22	4
Michigan (Lower)	12	11	8	1		20			1		1	19
Minnesota	2	7	16			23	1	2			7	12
Minnesota	2	14	4			22	6	8			22	0
Iowa	1		1			1		0			0	1
Ohio	3		14			4		14			14	0
Totals	35	57	0 47	1		105	30	0 32	1		63	37

The name of the state, property owner, county, township, range, section, and "NCP" in which the alpine plots are located is given in Table 2 below. The flora type and number of subzones are also included.

[illegible]

[illegible]

[illegible]

[illegible] No.	Name of river	County	[illegible]	[illegible]	[illegible] Sec.'60*	[illegible]	[illegible] River	[illegible]
		Upper Michigan						
1.	[illegible] (Menominee Detour.)	Clear	175	100	22	20/20	A	20
2.	[illegible] (Manistique Det.For.)	Alger	472	100	22	20/20	A	20
3.	Ontonagon Power Co.	Gogebic	420	220	56	20/20	A	20
4.	[illegible] (Ottawa Det.For.)	Iron	060	500	15	22/22	A	20
5.	[illegible] (Ottawa Det.For.)	Iron	480	570	2	—	A	20
6.	Peter Dauliveau	Gogebic	450	70	24	22/20	C	20
7.	Ironwood Club	Gogebic	150	90	21	22/20	A	20
8.	Ironwood Club	Gogebic	490	90	24	21/20	C	20
9.	[illegible] (Marquette Det.For.)	Gogebic	412	90	0	20/20	C	20
10.	[illegible] (Marquette Det.For.)	Gogebic	411	90	15	20/20	A	20
11.	[illegible] (Marquette Det.For.)	Gogebic	412	90	0	22/22	A	20
12.	Unknown (Corridor Lake River)	Marquette	470	270	0	20/20	A	20
13.	Unknown " " "	Marquette	470	270	3	20/20	A	20
14.	Unknown " " "	Marquette	470	270	2	20/20	A	20
15.	Unknown " " "	Marquette	470	270	0	—	A	20
16.	Unknown " " "	Marquette	470	270	0	—	A	20
17.	Unknown " " "	Marquette	470	270	0	100/20	A	20
18.	Unknown (Carp River Area)	Marquette	460	260	29	20	A	20
19.	Unknown " " "	Marquette	480	280	26	21/20	A	20
20.	Unknown " " "	Marquette	480	280	29	22/22	A	20
21.	Unknown " " "	Marquette	480	280	22	22/20	A	20
22.	Unknown " " "	Marquette	480	280	29		A	20
23.	Unknown " " "	Marquette	480	280	22	100	A	20
24.	Unknown " " "	Marquette	480	280	29	20/20	A	20
25.	Unknown " " "	Marquette	480	280	32	20/20	A	20
26.	[illegible] (Ottawa Det.For.)	Ontonagon	180	300	37	20/20	A	20
		Lower Michigan						
1.	Unknown	Alpena	380	80	14	20/20	A	20
2.	Unknown	Antrim	420	170	20	—	A	20
3.	Unknown (Carlisle River)	Crawford	270	50	12	—	A	20
4.	Unknown (Middle River)	Crawford	260	30	11	—	A	20
5.	Unknown (Indian River)	Gladwin	180	10	18	—	C	20
6.	Unknown	Grand Traverse	280	20	6	20	A	20
7.	Bailey Farm	Kent	30	120	3	20/20	A	20
8.	Van Vorst Estate	Leelanau	200	140	2	20/20	C	20
9.	Old Presbyterian	Leelanau	280	130	15	—	A	20
10.	Mr. Johnson Area	Montmorency	110	30	1	20/20	A	20
11.	Unknown	Montmorency	120	22	10	20/20	A	20
12.	Unknown	Montmorency	110	22	24	21/20	A	20
13.	Unknown	Ogemaw	260	30	27	20/20	A	20
14.	Unknown	Otsego	280	10	4	20/20	A	20
15.	Unknown	Otsego	300	20	12	20/20	A	20
16.	Unknown	Otsego	290	20	36	20/22	A	20
17.	Unknown	Presque Isle	320	40	12		C	20
18.	Unknown (Houghton Lake T.F.)	Roscommon	210	20	20	20/20	A	20
19.	Unknown " " "	Roscommon	210	20	30	(1)	A	20
20.	Unknown " " "	Roscommon	210	20	10	20/20	A	20

[illegible]	[illegible]	County	[illegible]	[illegible]	[illegible]	[illegible]	Time [illegible]	[illegible]
		Wisconsin						
[illegible]	[illegible] Lake Dri. Ga.	Racine	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Ra/Kenosha	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] Lake	Racine	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (Pewaukee Lake-Lor.)	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" (Violet Sal. Pon.)	Forest	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Forest	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Forest	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Forest	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Gr. Bart Island	Door	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Grand Bros.	Jackson	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Green Bland Lower Co.	Langlade	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Marathon	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Marathon	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Marinette	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Marqu.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Lindell Island	Oconto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Arbor Lake	Oconto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Oconto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Unknown	Oconto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Genoa Lake Dri/Reservation	Oneida	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Reservoir Dri/Reservation	Oneida	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Minnesota						
[illegible]	Cad Lake Dilles Energy	Cass/Itasca	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass/Itasca	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (Cliffrock Lake)	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (Superior Ref.Par.) (Gunflint)	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" (Superior) " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (Insulin Lake) " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	" (Shore) " "	Cook	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	" " " "	Cook	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
		Iowa						
[illegible]	[illegible] Ver/[illegible]	Winneshiek	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ribes types	[illegible]
			[illegible]					
1.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
I.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
II.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
III.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VII.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VIII.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
XIV.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
XV.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
A.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D.	"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The [illegible] plots with second inspection data were arranged by Ribes types [illegible] for each State. Table [illegible] gives a comparison of the amount of Ribes by species on these [illegible] Ribes plots before and after initial eradication for each State and for the North Central Region. In the summary of this table, note that in the swamp type (wet) [illegible] bushes, with [illegible] feet of live stem, were found on [illegible] plots with an area of [illegible] milacres. This gives an average of [illegible] bushes with [illegible] f.l.s. per acre for Swamp Ribes (See Table [illegible]). After the initial eradication [illegible] bushes with [illegible] feet of live stem were found, giving an average per acre of [illegible] bushes with [illegible] feet of live stem. This shows that for swamp Ribes initial eradication removed [illegible] of the bushes and [illegible] of the feet of live stem. Before initial eradication, the average feet of live stem per bush was [illegible]; after eradication [illegible] feet, thus showing not only a great reduction in number but also in size of swamp Ribes from eradication.

Twenty-five plots of upland hardwood type Ribes ([illegible]-type) with an area of [illegible] milacres had [illegible] bushes and [illegible] feet of live stem - an average of [illegible] feet per bush. After the initial eradication these plots showed only [illegible] bushes with [illegible] feet of live stem or an average of [illegible] feet of live stem per bush. The initial eradication removed [illegible] of the bushes and [illegible] of the feet of live stem.

Only one 10 milacre plot of upland pine ([illegible]-type) was recorded in the region. On this plot [illegible] bushes with [illegible] feet of live stem, an average of [illegible] feet per bush, were found. The initial eradication removed [illegible] of the bushes.

A summary for all-types [illegible] shows a total of [illegible] bushes with [illegible] feet of live stem, an average of [illegible] feet per bush, recorded on the [illegible] plots ([illegible] milacres) in the region prior to initial eradication. After initial eradication these same plots had a total of [illegible] bushes with [illegible] feet of live stem, an average of [illegible] feet of live stem per bush. The above record is equivalent to [illegible] bushes with [illegible] feet of live stem, before, and [illegible] bushes with [illegible] feet of live stem after initial eradication per acre for swamp type Ribes; to [illegible] bushes with [illegible] feet of live stem before and [illegible] bushes with [illegible] feet of live stem after initial eradication per acre for upland hardwood type Ribes; to [illegible] bushes with [illegible] feet of live stem before and none after initial eradication per acre for upland pine type Ribes. For all-types on the [illegible] plots ([illegible] milacres), an average of [illegible] bushes with [illegible] feet of live stem, before, and [illegible] bushes with [illegible] feet of live stem, after initial eradication, per acre is estimated (See

(Table 19). Of the total number of ribes on all 55 study plots 71.4% of them were the swamp-type ribes, 28.7% upland hardwood ribes, and 0.2% upland pine ribes.

"Comparing the average number of bushes per acre (See Table 19) there are over two and a half times more bushes on the swamp type than on the upland hardwood type and three and a half times more bushes on the swamp type than on the upland pine type per unit area.

"It is planned to continue observations on the above 55 plots, to make second inspections on the other 50 plots already established, and to establish additional plots within the region. Observations will be continued on such Ribes Regeneration Study plots over a period of years to determine when second eradications will be necessary for control of Blister Rust. The inspections made this year give the original Ribes content, and the Ribes content following first eradication. Future inspections should give data concerning the problem of Ribes Regeneration.

[illegible]

[illegible]

Long Time Work Plans

In order to intelligently plan a blister rust control program for a given state or region it is important that real estimates based on previous experience in the region be prepared giving the acres of white pine to be protected, the acres to be worked and the estimated number of man days required. The acres to work and man days required are shown for first, second and third eradication and acres of maintenance. These data are given by years until the entire working area is put on a maintenance basis. By maintenance basis is meant the reduction of all area such areas to a manageable area, that is the working down of all Ribes concentrations to a point where area work is no longer necessary and the only work required is a rapid going over of an area at infrequent periods to see that no Ribes concentrations are again appearing.

Such a plan for the region is shown in Table 25. It will be noted that according to this plan it will be necessary to remove Ribes from 4,800,157 acres in order to furnish protection to 1,244,554 acres of white pine. This plan provides for the establishment on a maintenance basis of the entire acreage to work by 1962.

Note that according to this plan all of these acreages can be put on a maintenance basis by the expenditure of approximately .6 of a man day per acre. This means that after adding a reasonable amount for allowance a pine stand can be insured against commercial damage on account of blister rust by the expenditure of approximately .6 of a man day per acre worked or approximately two man days per acre of pine.

In Table 26 there is shown an estimate of man days required, not only for the local control project as shown in Table 25 but also for nursery sanitation, first current eradication and pre-eradication surveys and other field data. Note in Table 26 that 91.6% of man days are to be spent on local control, 2.6% on nursery sanitation, 3.0% on cultivated black currant eradication and 2.7% on other field data.

In Table 27 there is shown a summary of the number of man days required for the complete work plan by states in this region.

Costs

The 1935 Blister Rust Control expenditures in the North Central Region are considered in two groups. Milwaukee costs are considered in Table 27 while in Tables 28, 29 and 31 costs of the field work (excluding Milwaukee) are given.

The Milwaukee expenditures (see Table 27) are all charged to supervision except the salary and expenses of Dr. Hungerford. His time is primarily devoted to field studies so it is natural to charge his time and expenses to "Other field Depts". The 1935 total Regional expenditures amount to $881,425.38 of which 5 - 1/2 percent were spent by the Milwaukee Office.

In Table 28 the Regional expenditures (excluding of Milwaukee) are shown by states and the programs participating in the program. It will be noted that the largest contributing program was the ECW with 51.9 percent of the total indirect. In Minnesota 44.4 percent of the total states regional expenditures were made. Considerable of the Minnesota expenditure was made during the winter months when, in that state, no intensive CCC elimination program was manned.

Table 27. - Summary Man Days Required, Work Plan by States, North Central Region, From Inception to 1953

State	Year of Completion	Local Control	Nursery Sanitation	Cultivated Black Currant Eradication Initial	Cultivated Black Currant Eradication Re-Check	Pre-eradication Survey and Other Field Data	Total Man Days
Michigan	1948	1,030,172	21,616	14,072	7,800	30,446	1,094,016
Wisconsin	1947	740,078	31,851	22,515	10,600	21,377	826,419
Minnesota	1950	649,680	8,087	5,700	1,500	25,800	697,716
Iowa	1950	49,815	461	6,000	6,500	5,900	64,676
Illinois	1944	6,380	2,600	400	200	470	10,050
Indiana	1947	11,197	670	200	500	575	13,142
Ohio	1951	147,041	7,790	11,200	8,000	5,650	179,681

Table 28. - Expenditures for all Fixator Dust Control Projects in Firemaster During the Calendar Year 1956

Agency	Expenditure Classification	Supervision	Other Field Data	Equipment & Misc.	Total
Regular	Salaries	4,897.85		-	[illegible]
	Expenses	402.02		15.26	[illegible]
	Sub-total	[illegible]		[illegible]	[illegible]
F.S.- F.F.F.	Salaries	1,290.32			[illegible]
	Expenses	-			
	Sub-total	[illegible]			[illegible]
B.B.+.	Salaries	1,832.20		-	[illegible]
	Expenses	389.60		130.95	[illegible]
	Sub-total	[illegible]		[illegible]	[illegible]
W.P.A.	Salaries	1,358.97	594.40	-	[illegible]
	Expenses	450.90	295.50	1,401.50	[illegible]
	Sub-total	[illegible]	[illegible]	[illegible]	[illegible]
Total	Salaries	11,259.82	594.40	-	[illegible]
	Expenses	[illegible]	[illegible]	1,547.45	[illegible]
	Totals	[illegible]	[illegible]	[illegible]	[illegible]

Table 93. - Total Region Expenditures, Classified According to State and Program 1935
(Exclusive of Milwaukee Cities)

Program	Michigan	Wisconsin	Minnesota	Iowa	Illinois	Ohio	Total	Percent
State & Private	18,066.07	3,254.39	4,647.92	4,350.00	35.40	2,677.34	28,064.46	[illegible]
Tenn. Relief			445.28			134.12	577.40	[illegible]
State E.R.A.	1,257.48	1,209.68	419.25			966.06	3,854.37	[illegible]
Federal E.R.A.	2,862.04	6,688.96					9,549.00	[illegible]
F.S.-S.E.R.A.	152.00						152.00	[illegible]
N.I.R.A.	11,873.44	19,832.12	6,580.38	3,668.34		4,753.76	45,816.08	[illegible]
Federal Drought Relief		8,902.57					8,902.57	[illegible]
C.W.A.	116,489.06	137,866.74	95,704.05	11,448.22		6,362.37	368,947.43	[illegible]
S.T.A.						175.80	175.80	[illegible]
State-S.C.W.	34,272.55	67,038.88	6,444.61			1,753.80	109,509.84	[illegible]
Force-S.C.W.	2,256.50			169.00			2,425.50	[illegible]
T.S.-S.C.W.		35,340.55	5,476.99				40,816.54	[illegible]
T.S.-S.C.W.	11,346.91	15,974.24	13,937.06				36,258.32	[illegible]
Tech.-S.C.W.	2,687.19	2,316.97	4,097.97				9,101.13	[illegible]
Federal Regular	2,300.59	1,588.05	1,246.56	1,984.59		1,171.46	8,291.24	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Percent	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

Table 30. - Total Region Expenditures, Classified According to Activity and State 1935
(Exclusive of Milwaukee Office)

Activity	Michigan	Wisconsin	Minnesota	Iowa	Illinois	Ohio	Total	% of Total
Supervision S.E.C.	9,647.39	11,469.20	19,006.17[a]	4,795.90		4,891.55	49,809.61	7.5
Agent Activity Tribes	17,391.15	15,436.68				973.43	30,600.33	4.7
Emancipation Nursery	151,355.38	199,606.05	59,523.81	10,827.49	208.80	7,273.99	428,699.40	64.3
Sanitation S.E.C.	10,480.86	4,445.40	1,459.15	503.65		7,743.14	19,634.56	2.9
Rehabilitation	10,094.38	60,663.94	22,488.50	1,237.34		2,580.67	97,076.77	14.5
Pre-Rehabilitation Surveys	15,595.44	9,913.84	18,331.15	1,031.51		890.97	39,663.90	5.9
Cleaning	6,114.09	2,416.91					8,531.00	0.8
Other Field Data	875.66	442.46				5.00	923.12	0.1
Equipment	793.58	3,208.04				32.01	4,033.63	0.6
Total	217,513.97	295,578.53	115,377.81	18,695.56	208.80	19,772.76	666,930.72	

[a] Approximately 85% chargeable to Agent Activity.

Table 31. - Total Region Expenditures on Wages and Other Than Wages, North Central Region, 1955
(Excluding Milwaukee Office)

State	Wages	Other Than Wages	Total
Michigan	$800,684.09	$16,932.86	$817,616.97
Wisconsin	283,162.38	38,410.77	995,572.32
Minnesota	100,301.87	15,075.94	115,377.81
Iowa	14,252.66	4,450.80	18,695.26
Illinois	205.20	5.00	206.20
Ohio	13,518.96	4,253.00	17,771.96
Total	1,212,124.93	173,115.79	665,150.31
% of Total	88.0	11.0	

ranks in listing the total expenditures according to states and activity. It is interesting to note that in spite of the overhead that we must tolerate and the same correlating programs such as checking, mapping, CPC eliminations etc. that 94.4 percent of all costs are charged to actual Ribes Eradication.

In Table 21 the total expenditures made by the six indulging states are divided into "Salaries" and "Other than wages". It is interesting to note that 62 percent of the expenditures were spent on wages. This gives further proof that our control program, which is not "made work" is ideal for a relief program. Very few if any projects could throw a greater portion of the relief money to the actual laborers, where the relief is intended, than does our control program.

Conclusion.

In spite of the late start of the WPA blister rust control program, a satisfactory showing was made in local control.

Through the WPA program cultivated ribes current eradication was given a large impetus in Wisconsin, Minnesota, Ohio and Iowa, and practically completed, first time ever, in Michigan.

A large scale test of the use of labor under the WPA program was made, and it was plainly evident that blister rust control is not only an excellent work relief project, because a high proportion of the funds goes to labor, but also control work on thousands of acres of white pine has been accomplished prior to damage by the rust.

BLISTER RUST CONTROL, MICHIGAN, 1938

History of the Work

Blister rust work in Michigan started in the spring of 1917 when three or four temporary men were employed scouting for the rust, particularly on imported nursery stock. Infection was first found in 1917 in Oakland County on white pines imported from France.

From 1917 to 1926, inclusive, blister rust work was continued in a limited amount of scouting for infection on Ribes and pines during the summer months. In 1927 a permanent agent was appointed to take charge of all blister rust work in the state.

In 1929 the first cooperative control project was initiated. The cooperative control money was obtained from a local organization and some individual cooperators.

In 1929 the State Legislature established a definite blister rust fund and made available $25,000 for this work during each of the succeeding two years. As a result of the increased money available for the work, another state permanent agent was appointed during the latter part of 1929 and two more permanent men were added to the force in July, 1930.

In 1931, due to decreased revenues and to unfavorable conditions, the personnel and blister rust control organization was reduced to the minimum.

In 1933, the largest amount of local control work in this and other states was due principally to the use of relief labor on control projects. During 1933 a total of 16,257 acres were cleared of 1,197,181 Ribes to furnish protection to 7,796 acres of white pine.

From 1929 to 1933, inclusive, 31,817 acres of white pine were protected by removing 3,517,857 wild Ribes and 2,771 cultivated Ribes from 82,473 acres of control work and 160 acres treated for the second time.

In 1934, regular control work using mainly relief labor and [illegible] by individual pine owners was performed to a limited extent by the state. When the ECW program started in May, all efforts were directed toward performing the control work through this agency. On August 12, 1933, $75,000 was made available through the National Recovery Act. Owing to unavoidable delays, a small amount of actual control work was performed under NRA in 1933.

During 1935, principally through the emergency relief programs, a grand total of 60,873 acres were cleared of 3,067,447 Ribes bushes to protect 31,181 acres of white pine, at a cost of 9,287 man days of labor.

All phases of control work were assisted in 1935 and in 1936 seven agencies participated. These agencies were: State, WPA, CCC-ECW, [illegible], [illegible], ERA and BPI. The work of these agencies brought about the initial protection of 57,205 acres of pine by removing 12,110,785 Ribes bushes from 194,672 acres of land. Some second eradication was also performed as well as

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Table 35. — Approximate Number of Men Employed on Blister Rust Control Activities in Michigan, 1939.

Program	Position	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Approx. Man Months
State	State Leader	1	1	1	1	1	1	1	1	1	1	1	1	12
	Foreman					2	11	11	11	11	5	2	1	54
	Sub-total													[illegible]
Federal	Dist. Agents							2	2	2	2	2	2	12
	Dist. Assts.	2	2	2	2	2	2							12
CWA	Supervisors	7	4	6	2	6								25
	Foreman	2	2	1		2	10							17
	Laborers						86							86
	Sub-total	10	9	9	2	11	98							141
FERA	Laborers						73	35						108
	Technician	1	1	1	1	1	1	1	1	1	1	1	1	12
CC-SCS	Tech. Foreman					4	3	7	1	1	1			17
	CCC Laborers					60	170	206	50	18	15			519
	Sub-total	1	1	1	1	65	174	214	52	19	17	1	1	[illegible]
	Checkers	5	5	5	5	6	5	5	5	5	5	5	5	60
State-SCS	Foreman					5	20	20	25	20	4			94
	CCC Laborers					260	507	446	545	676	78	1	1	2518
	Sub-total	5	5	5	5	260	532	471	575	701	87	6	7	[illegible]
	Foreman						3	2	1	2				8
Turbo-SCS	CCC Laborers						28	28	30	58				144
	Sub-total						30	30	31	54				[illegible]
CWA	Supervisors								3	9	8	8	8	36
	Non-Relief Skilled									4	11	11	12	38
	" " Intermediate								1	1	1	1		4
CWA	Relief-Skilled								4	14	18	26	51	113
	" -Intermediate								77	85	87	41	3	293
	" -Unskilled								165	189	430	308	59	1151
	Sub-total								[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Grand Total		18	16	16	18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Superintendent-Tree Doctor	1	1	1	1	1	1	1	1	1	1	1	1	12
	Central Office	1	1	1	1	1	1	1	1	1	1	1	1	12
	Supervisors	[illegible]	12	12	12	12	4	4	4	12	12	14	14	[illegible]
	Crews	1	1	1	-	11	1	10	27	1	1	1	1	117
	Sub-total	19	16	16	19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Labor													
	Skilled Labor	[illegible]							4	12	25	29	14	112
	Intermediate Labor	[illegible]							25	84	25	22	2	[illegible]
	Unskilled Labor	[illegible]				300	825	730	590	1128	681	406	59	[illegible]
	Sub-total Labor					[illegible]	[illegible]	755	919	[illegible]	[illegible]	450	[illegible]	
Grand Total		19	16	16	19	[illegible]	[illegible]	784	970	1254	723	504	[illegible]	[illegible]

Iosco County. [illegible] a stand number of 1950 growth was found on a [illegible] site.

Leelanau County. In this county a young number of 1950 growth was found on a middle aged site near the east shore of Glette Lake.

Ontonagon County. Two infestation areas were found near Lake City and on the Ladore of Ontonagon County. The infestation in these dated from 1930 and [illegible] infestations on 1934 growth. Infection was apparently brought about by [illegible] the [illegible] nearby in close proximity to the pines.

Schoolcraft County. A stand number of 1930 growth was found near the [illegible] Nine infestation noted in Ontonagon County.

The present status of Sirex root infestions is given in Table VI.

White Pine Acreage

The latest estimates of acres of white pine in Michigan based on all available information and pre-reconnaissance surveys are as follows:

1st priority white pine	37,,000 acres
2nd priority white pine	220,000 acres (Est.)
White pine to be protected	262,000 acres
Scattered white pine	450,000 acres
Total white pine	712,000

The qualifications for first and second priority pine stands are listed in the following extract from the "Manual of Procedure for Sirex Root Control in the North Central Region".

"Minimum requirements for priority white pine stands

3-6 ft. high	—	200 pines per acre
7-12 ft. high	—	150 pines per acre
13 ft. and up	—	[illegible] pines per acre

White pine stands meeting these minimum requirements are considered as first priority pine and other pine conditions are considered but protection [illegible] not justified.

In the Lake States region there are large areas of white pine not meeting the above specified minimum requirements but which contain white pine [illegible] sufficient number either to justify limited protection work in thinning or [illegible] responsible for protecting small stands of white pine in the process of [illegible] of hardwood brush. These stands of white pine which do not qualify as [illegible] priority pine can be given a set of minimum requirements approximately one [illegible] of minimum requirements of pines in the first priority class. These [illegible] would apply to native stands in lower areas of minimum size of 20 acres when the following number of pines per acre in the different size classes.

3-6 ft. high	—	60 pines per acre
7-12 ft. high	—	40 pines per acre
Over 12 ft. high	—	30 pines per acre

Table 21. - Yearly count of infection in counties (counties classified according to year infection first found)

Year When Infection First Found Before 1927	Name of County Infected Last	When Infect. Only	When and When Infecting: Year Time Infection First Found												Total Number Counties Infected
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27		
			2												
			1												1
1924	St. Clair	1													
	Lapeer	1													
	Genesee	1													
	Shiawassee	1													
	Huron	1													
	Saginaw	1													
	Bay	1													
	Midland	1													
	Gratiot	1													
	Montcalm	1													
	Ionia	1													
	Clinton	1													
	Eaton	1													
	Ingham	1													
	Jackson	1													
	Lenawee	1													
	Ohio	1													
	Monroe	1													
	Genesee					1									
	Sanilac							1							1*
1925	Montcalm								1						
	Newaygo								1						
	Wexford	1													
	Mecosta	1													
	Osceola	1													
	Charlevoix			1											
	Cheboygan				1										
	Tuscola						1								1
1926	Grand Traverse	1													
	Delta*								1						
	Dickinson*	1													
	Menominee*	1													
	Gogebic*														
	Ontonagon*														
1927	Alpena	1													
	Alcona*	1													
	Iron*														
1928	Mackinac	1													
	Presque Isle	1													
	Antrim														
	Otsego														
	Oceana														
	Mason														
	Alger*	1													
	Luce*	1													
1930	Ottawa	1													
[illegible]	[illegible]	7													11
Total	[illegible]	2													
	Total	2													

* Upper Peninsula Counties.

Demonstration Survey of Pine Plantations Threatened by Sirex

Before and after the eradication season the supervisory personnel needed time to bring preliminary surveys. This work consisted of making detailed maps of only pine areas which protecting and estimating the acreage to be worked by crews and by hand and operating and days of labor required. This survey formed the basis of estimating the cultural program for the coming year.

The purpose of making a pre-planting survey is to determine the amount of work which will be involved in protecting the proposed plantations from Sirex rugi. The work consists of searching lands suitable for the planting of white pine in relation to Sirex conditions. There are hundreds of thousands of acres of idle land in Michigan suitable for the growing of white pine where a cultural work is necessary due to the severity of Sirex. It is on such lands that white pine should be planted.

The tables deal with preventiveness surveys as follows:

Table 34 covers the work on Federal forests.

Table 35 includes survey information of the state 108 county.

Table 36 shows results of the survey as conducted in the 1941 program.

Table 37 shows similar results except extended through the 1942 program only to 1941.

Table 38 shows per diem work in thousands and this is shown in this table.

Table 39 summarizes all preventiveness survey work recorded plus and pine planting, site areas as performed to date.

Local Control

This phase of the work consists of spraying all Sirex infested and infestation growing in the pine stands and which are 600 feet probability that should stop.

Before the advent of the Civilian Conservation Corps and Relief Labor, the owner supplied their own labor, while the state and federal governments provided the supervision. However, since this labor has been unavailable, many pine areas have been prevented of an supplies to the owners. If we have a planning program which may pine stand, planting results a county or direct, is of benefit to those who not to the there is a whole experiment of complete. Control of the Sirex which is difficult, if only certain classes of ownership are considered. For these reasons, all pine areas, regardless of ownership are being given protection.

This initial eradication of Sirex will remain effective for a period of from three to five years, after which time the areas should be reworked, due to the occurrence of Sirex from each, apart from improperly removed crowns, or the conditions which may have been overlooked in the work. Pine owners are being informed of the necessity of reworking these areas in from three to five years, and in the event of emergency labor is available at that time, they are being informed that it will be up to them to supply the labor if they want the protection of their

Table 21. - Pre-Eradication Survey on National Forests (CCC Camps) Michigan, 1935.

Camp	Forest	No. Areas	Acres to be inventoried Lst Yr	Acres to be inventoried Ind Yr	Acres to be worked Crew	Acres to be worked Scout	Acres to be worked Total	Estimated Man Days Crew	Estimated Man Days Scout	Estimated Man Days Total	Man Days F.S. S.C.W.	Man Days Emer. Tech.	Costs F.S. S.C.W.	Costs Emer. Tech.	Total
							Lower Peninsula								
Weston	Ottawa	2	140	231*	48	1180	1231	104	6	110					
Total for Lower Pen.		2	140	231	48	1180	1231	104	6	110	2		1180		[illegible]
				Wisconsin Site											
							Upper Peninsula								
Iron River	Ottawa	2	288	0	288	0	288	480	0	480					
Seeley	"	5	247	44	1466	0	1460	1466	0	1466					
Watersmeet	"	2	920	0	3660	8	3660	3660	1	3660					
Ironwood	"	2	75	0	377	0	377	377	0	377					
Ontonagon	"	10	565	467	4746	0	4746	4745	0	4746					
Subtotal		21	2095	511	10882	8	10881	10775	1	9772	2	16	1882	16026	[illegible]
Isle Royale	Marquette	2	79	0	420	0	420	414	0	414					
Ewen	"	3	216	0	980	0	980	1365	0	1365					
Subtotal		6	295	0	1376	0	1375	1779	0	1780	2		2057		[illegible]
Total for Upper Pen.		27	2390	511	12258	8	12256	12554	1	11552	4	16	1882	16026	[illegible]
Total for Camps		29	2531	742	12306	1188	13487	12658	7	11662	6	16	18026	16026	[illegible]

Table 13. - [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	8	[illegible]	[illegible]	[illegible]	1,166	[illegible]	[illegible]	11	[illegible]
[illegible]	[illegible]	7	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1	[illegible]	0	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

(Continued)

[illegible]

1985

(Dept [illegible])

[illegible]	County	No. [illegible]	Expenditures Personnel First	Second	Other Expenditures First	[illegible]	Total	Revenues Received Other Sources Grant	[illegible]	[illegible]
[illegible]	[illegible]	31	1,750	750	1,895	4,017	1,510	3,750	351	[illegible]
[illegible]	[illegible]	3	185	0	450	90	880	400	4	400
[illegible]	[illegible]	6	1,500	400	1,001	3,157	5,143	1,715	15	[illegible]
[illegible]	[illegible]	32	17,715	1,895	1,995	9,583	2,157	8,457	775	[illegible]
[illegible]	[illegible]	28	14,183	5,000	13,300	6,175	34,91	21,103	10	[illegible]
[illegible]	[illegible]	3	3,105	0	3,000	147	3,643	7,148	34	[illegible]
[illegible]	[illegible]	10	1,150	1,075	7,195	4	8,119	1,500	0	[illegible]
[illegible]	[illegible]	3	185	0	50	502	517	194	50	147
[illegible]	[illegible]	3	10	0	0	50	150	0	0	0
[illegible]	[illegible]	17	3,400	0	5,010	77	5,885	2,303	1	[illegible]

1985

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 16 [illegible]

LOAN PROGRAMS

County	No. Loans	Loan Flow Private First	Loan Flow Private Second	Loans-in-Force Private First	Loans-in-Force Private Second	Loans-in-Force Total	Estimated Tax Data Required Tax	Estimated Tax Data Required Second	Estimated Tax Data Required Total	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	11	191	16	2,271	1,756	4,27[illegible]	1,061	41	1,10[illegible]				
[illegible]	14	1,581	0	2,881	1,509	13,455	4,085	154	4,2[illegible]				
[illegible]	3	180	0	127	279	407	95	15	110				
St. [illegible]	2	57	24	72	941	1,013	450	72	524				
[illegible]	7	71	21	120	400	520	315	31	340				
[illegible]	4	61	28	100	900	1,015	94	16	110				
[illegible]	23	1,071	[illegible]	1,[illegible]	4,[illegible]	[illegible]	1,[illegible]	175	[illegible]				
[illegible]	21	385	0	1,473	850	2,[illegible]	1,[illegible]	93	1,400				
[illegible]	5	1,080	401	5,1[illegible]	7,[illegible]	12,[illegible]	5,[illegible]	182	5,[illegible]				
[illegible]	4	269	81	743	789	1,[illegible]	269	35	1,014				
[illegible]	41	1,169	505	2,[illegible]	4,[illegible]	2,[illegible]	8,[illegible]	190	8,498				
[illegible]	16	269	46	427	386	1,013	675	40	715				
[illegible]	75	4,[illegible]	481	5,109	85,[illegible]	91,609	8,[illegible]	783	8,[illegible]				
[illegible]	75	1,577	327	4,[illegible]	4,[illegible]	8,[illegible]	4,[illegible]	83	4,[illegible]				
[illegible]	4	180	0	880	980	1,040	399	85	410				
[illegible]	74	2,[illegible]	145	4,[illegible]	11,[illegible]	15,[illegible]	7,[illegible]	527	8,[illegible]				
[illegible]	3	85	130	70	1,[illegible]	1,[illegible]	77	53	430				

[illegible]

[illegible]	14	3,16[illegible]	771	1,[illegible]	4,[illegible]	5,[illegible]	5,[illegible]	13	5,[illegible]				
[illegible]	47	5,[illegible]	785	9,[illegible]	1,[illegible]	1[illegible]	14,[illegible]	95	2[illegible]				

[illegible]

Table [illegible]: Pre-disaster survey, Elsie County, [illegible]

County	No. towns	Loss Type Priorities: First	Second	Loss $, in dollars: Year	Cumul	Total	Estimated tax value equivalent: Year	Cumul	Total	Tax days value Years	Costs Years
					Loss percent, 000's						
Tallman	8	863	0	1,900	900	2,800	1,198	60	1,258		
Beatrice	10	1,086	521	1,860	7,500	10,518	2,195	163	2,358		
Dickson	4	2,310	0	70	4,500	4,570	72	4	76		
Total	24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table [illegible] - Summary of [illegible]

[illegible]

Table [illegible] - [illegible]

[illegible]


MICHIGAN

-Texas continued

The Emergency Conservation Work local control program was seriously impaired early in the season due to camps being split up to establish new ones. During this transition period, it was particularly difficult to obtain and keep a full sized crew. In addition to this, the heavy planting program on the National Forests required nearly all available man-power, leaving very little for Elm eradication. This was particularly true on the Angelina National Forest.

Eradication work was performed by the Civilian Conservation Corps, of which there are three groups: (1) Forest Service Emergency Conservation Work (ECW) Camps, which confine their activities to lands inside the boundaries of the Federal Forests; (2) Michigan Emergency Conservation Work (MECW) Camps, doing work outside of National Forests; and (3) National Park Emergency Conservation Camps, which confine their activities to State Parks and adjoining lands.

A small amount of control work was performed by FERA until that program ended in July. Some work was also performed with local men employed on our re-existing ECW funds until this program ended in June 1940.

For a period of six weeks, July 1st to August 10th, all programs, including Emergency Conservation Work and the employment of a few men on the state payroll, were at a standstill due to the expiration of ECW and FERA programs. This lay-off greatly curtailed the local control program, as it came at the height of the eradication season.

Early in August, Works Progress Administration (WPA) funds were made available. This program was expanded as rapidly as possible until some 700 men were employed throughout the State in September. Over 60% of the men who worked on this program were taken from the Relief Rolls. The work was greatly facilitated by the splendid cooperation of the U. S. Re-employment Service and Texas Progress Administration officials. Eradication work was continued until November when the men were absorbed by other WPA projects. A few of the men were retained after the eradication season to do black walnut work and pre-eradication surveys.

Results of local control work performed by these various agencies are shown in the following tables:

Table 40 showing results of local control work carried on in the National Forests by F. C. W. Camps.

Table 41 showing results of local control work out of E. C. W. F. Camps.

Table 42 showing results of local control work out of Texas Park Camps by E. C. W.

Table 43 showing results of local control work with F. E. R. A. labor.

Table 44 showing results of local control work with W. P. A. labor.

Table 45 showing results of local control work with W. P. A. labor.

Table 40. - Summary of Local Control, F.S.-E.C.W., Michigan, 1935.

Camp	Forest	Acres Pine Priority First	Acres Pine Priority Second	Acres Worked Crew	Acres Worked Scout	Acres Worked Total	Pines Pol. Crew	Pines Pol. Scout	Man-Days Total	Man-Days CCC Labor	Man-Days ECW Super.	Cost CCC Labor	Cost ECW Supervision	Cost State ECW Trans. and Materials	Cost Total
									1st Eradication						
Cedar	Huron	707	0	276	1,915	2,191	17,343	23	17,361	281	10	281.00	44.80	0	326.[illegible]
									2nd Eradication						
Cedar	Huron	496	0	7	1,575	1,582	222	0	222	10	2	9.47	12.60	0	22.[illegible]
Total 1st and 2nd Eradication		1,203	0	283	3,490	3,773	17,565	20	17,585	291	12	291.00	57.40	0	348.[illegible]
									UPPER PENINSULA						
									1st Eradication						
Kenneth	Marquette	*	0	0	194	194	53,532	0	53,532	136	12	204.00	87.90	29.71	321.61
Pine River	"	*	0	0	0	0	10,506	0	10,506	59	6	88.50	33.40	0	121.90
Wyman	Hiawatha	32	0	6	194	200	200	265	465	8	1	12.00	5.20	0	17.20
Chatham	"	250	0	0	595	595	47,913	65	47,978	365	36	547.50	237.63	0	785.13
Polack Lake	"	140	0	132	223	345	38,251	0	38,251	231	27½	346.50	150.36	0	497.[illegible]
Denton	Ottawa	35	0	270	100	370	107,862	441	108,303	430	22	645.00	254.82	60.90	956.[illegible]
Fort	"	0	0	120	0	120	85,808	0	85,808	354	7	531.00	139.44	11.99	682.43
Paint Lake	"	*	0	20	0	20	12,088	0	12,088	32	4	48.00	50.60	15.17	113.77
James Lake	"	*	0	0	0	0	**	**	**	204	3	306.00	15.78	24.98	346.76
Watersmeet	"	250	0	5	840	845	1,210	136	1,243	26	3½	39.00	13.46	8.34	60.80
Total		737	0	543	2,146	2,689	357,369	904	358,273	1,845	122	2,767.50	958.16	145.09	3,870.97
Total Upper and Lower Peninsula		1,940	0	826	5,636	6,462	374,934	924	375,858	2,136	134	3,058.50	1,015.78	145.09	4,219.37

* Jobs incomplete

** Field data incomplete

[illegible]

Name	No. of Jobs	[illegible] Field	[illegible] Nursery	Acres Treated Open	Acres Treated Under	Acres Treated Total	[illegible] Open	[illegible]	[illegible] Total	Man Days CCC Labor	Man Days WPA Labor	Man Days State Super.	Man Days Other Super.	Costs CCC Labor	Costs [illegible]	Costs State Supv.	Costs Equip., Trans. and Sal.	Costs [illegible]	Total
										LOWER PENINSULA									
										1st Production									
[illegible]	6	711	0	773	677	1,450	273,704		151,754	310			25	357.20	105.02		127.14		1,573.41
[illegible]	14	1,444	0	1,396	6,432	7,827	190,042	[illegible]	187,050	1,649			95	1,755.00	885.02		100.85		3,153.40
[illegible]	8	500	0	108	928	1,080	17,414	[illegible]	14,290	140			15	138.70	70.48		13.21		320.28
[illegible]	5	4,888	0	328	7,099	17,425	156,382	1,[illegible]	135,422	2,085			11½	2,089.90	67.13		175.27		2,408.52
[illegible]	5	12	1,099	31	1,640	1,701	57,888		57,002	107			11	308.00	53.17		4.80		365.23
[illegible]	7	420	0	485	1,782	2,236	390,924	[illegible]	275,447	1,495		11	70	1,528.40	128.07	31.25	51.80		1,800.14
[illegible]	12	1,808	0	618	4,377	5,963	409,679	[illegible]	408,606	1,121			60	1,186.90	298.98		186.28		1,752.06
[illegible]	14	1,002	0	1,000	4,850	5,880	111,378	1,[illegible]	117,175	1,196		8	60	1,200.80	210.70	78.67	120.82		1,411.00
[illegible]	14	1,062	5	1,030	3,449	4,480	478,058	10,[illegible]	327,141	1,586			76	1,609.00	429.44		47.45		2,110.00
[illegible]	10	329	0	1,711	440	2,329	198,488	1,[illegible]	196,068	695			50	755.00	548.10		52.10		1,307.00
[illegible]	12	1,098	0	1,772	5,046	6,442	420,710	2,[illegible]	124,076	1,455			64	1,600.45	180.00		50.12		1,827.45
[illegible]	13	2,506	0	2,400	2,412	4,845	302,371		302,470	1,044			45½	1,022.80	700.12		92.77		2,177.60
[illegible]	9	584	0	561	1,757	2,277	188,130		188,130	1,587			70	1,575.60	185.18		70.22		2,026.00
[illegible]	8	488	60	613	1,120	1,280	191,164	[illegible]	191,160	908½		80	40	908.00	172.20	178.60	74.45		1,342.40
[illegible]	4	185	0	383	680	486	165,614	[illegible]	125,775	485			25	708.40	111.70		12.52		893.67
[illegible]	10	595	0	1,336	4,374	5,708	117,732	[illegible]	116,084	1,139½	60		83	1,817.20	773.41		75.32	103.88	1,770.22
Sub-total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										2nd Production									
[illegible]	2	288	0	271	875	1,175	193,382		175,732	477				175.00	[illegible]		15.31		198.13
[illegible]	1	100	0	343	0	343	1,300		1,300	100			4	100.00	70.40		8.82		187.17
[illegible]	1	288	0	275	[illegible]	485	37,388	[illegible]	35,776	117			40	316.50	130.10		20.87		[illegible]
Sub-total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		0	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]
Total 1st + 2nd Prod.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										UPPER PENINSULA									
										1st Production									
[illegible]	2	4	0	280	185	703	24,000		22,807	300			5	307.50	37.39		6.58		360.47
[illegible]	5	709	112	378	1,077	1,455	195,900	1,[illegible]	197,012	906			50½	1,008.80	250.19		60.33		1,381.40
[illegible]	6	989	0	882	1,000	2,082	485,893	1,[illegible]	485,800	1,110			85½	1,100.50	258.73		88.42		2,015.50
[illegible]	17	17,414	7,720	810	70,050	70,586	582,150		582,114	975			47	980.40	271.03		75.44		1,701.87
[illegible]	8	5,162	0	1,840	3,125	4,703	607,711		562,770	1,800			50½	1,700.40	135.59		74.97		1,962.40
[illegible]	7	565	103	1,170	0	5,158	913,590		613,270	1,094			50½	1,100.80	305.32		45.28		1,480.48
[illegible]	3	690	0	1,400	206	1,608	375,063	2,[illegible]	371,964	1,126			56½	1,157.85	751.70		90.38		1,981.31
[illegible]	4	110	0	408	410	818	80,280	[illegible]	80,620	469			25½	505.80	205.79		34.46		745.65
[illegible]	3	200	0	480	0	480	124,610	[illegible]	118,631	845			47	847.40	[illegible]		74.40		1,060.80
[illegible]	10	[illegible]	110	373	3,455	3,758	[illegible]	[illegible]	151,772	1,075			47	1,075.00	343.38		19.35		1,444.43
Sub-total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
										2nd Production									
[illegible]	3	245	0	350	570	880	[illegible]		[illegible]	121			50	321.00	136.14		17.07		575.39
Sub-total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
Total 1st + 2nd Prod.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]		[illegible]
Grand Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Job incomplete

Table 4A. - Local Control, Fiscal Year [illegible]
Florida 1970

Table XI. - Local Control, WPA Program, Mississippi, 1935.

County	No. of Jobs	Lower Priorities First Period		Lower Worked Men	Women	Total	Prior Public Cost	Other	Total	Man Days WPA Labor	FERA Labor	NYA Labor	WPA Supervisor	State Supervisor	Costs WPA Labor	FERA Labor	NYA Labor	WPA Supervision	State Supervision	Total
										Lower Priority: 1st Consideration										
Panola	9	4,154	180	3,980	2,088	6,068	358,940	150	359,090	1,780	0	0	86	11	3,404.00			412.10	144.48	3,962.04
Ot. Tunnels	13	1,549	0	3,031	672	3,704	588,983	34	589,420	1,809	0	0	60	1	5,064.98			768.82	5.10	5,838.70
Scott	8	0	8	1,990	0	1,990	8,437	1	1,438	330	0	0	44	0	990.00			165.00	0	1,015.00
Tate	18	584	0	1,141	2,121	3,158	300,444	10,144	310,084	1,480	0	0	45	18	3,440.00			191.45	103.21	3,814.66
Leflore	6	4,701	0	3,476	5,643	8,839	863,093	17,990	881,083	6,187	650	48	72	0	6,134.15	878.40	611.04	511.65	0	7,938.00
Chickasaw	13	1,410	802	1,175	4,476	5,653	858,019	561	858,580	1,686	0	0	56	68	5,086.82			488.95	194.75	5,809.40
Bolivar	18	1,805	180	1,461	3,183	4,644	141,064	2,348	143,112	1,848	0	0	26	30	2,014.75			511.85	393.57	2,964.17
Humphreys	10	1,117	104	2,508	2,351	4,864	580,477	20,777	601,274	1,680	0	0	17	51	4,778.00			105.38	248.05	5,125.42
Sunflower	7	981	0	1,981	3,946	5,927	369,164	4,481	373,645	1,407	0	0	54	6	3,936.48			860.94	40.00	4,836.96
Yazoo	5	844	0	439	3,486	3,884	75,860	1,450	77,141	513	0	0	46	12	1,488.75			105.50	152.00	1,746.25
Newaygo	2	180	0	386	380	680	88,098	290	54,088	434	0	0	10	8	1,141.00			82.98	0	1,223.98
Oceola	12	3,558	102	4,189	4,056	8,185	37,056	2,530	39,586	1,014	0	0	45	0	2,387.41			803.60	0	3,061.41
Charleston	1	0	0	540	0	540	1,154	0	1,154	38	0	0	0	0	148.00			0	0	148.00
Sub-total 1st Prod.	107	19,[illegible]	1,[illegible]	[illegible]	19,989	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										2nd consideration										
Adams	1	18	0	42	102	144	7,240	[illegible]	9,008	71	0	0	0	12	128.75			0	41.40	169.15
Madison	1	220	0	0	400	210	284	0	184	18	0	0	1	0	18.25			0.25	0	18.50
Washington	1	112	0	218	204	448	23,040	[illegible]	24,450	212	0	0	1	19	276.17			4.58	137.26	1,018.18
Covington	1	302	0	191	1,119	1,310	14,191	21	14,212	183	0	0	9	2	155.49			42.00	23.00	456.49
Sub-total 2nd Prod.	4	554	0	434	1,844	2,092	7,[illegible]	[illegible]	[illegible]	486	0	0	9	32	1,528.15			21.50	1.37	1,600.52
Total 1st and 2nd Consideration	111	18,219	1,873	33,788	31,606	58,670	[illegible]	[illegible]	[illegible]	18,541	356	49	531	187	34,91[illegible]	878.40	611.04	1,[illegible]	1,[illegible]	[illegible]
										Lower Priority: 1st Consideration										
Delta	6	890	0	1,990	890	2,880	190,352	134	190,486	1,271	0	0	130	31	2,354.87			850.28	147.00	4,382.42
Marquette	6	5,013	0	5,289	696	6,982	8,507,867	[illegible]	8,508,180	10,948	0	0	190	0	31,074.60			802.98	0	31,881.80
Pemiscot	4	978	0	2,180	980	3,170	494,352	133	494,702	1,697	0	0	146	69	4,860.75			262.80	572.93	6,107.18
Sub-total 1st Prod.	16	6,894	0	10,363	1,716	12,[illegible]	9,[illegible]	[illegible]	1,014,[illegible]	14,016	0	0	463	30	[illegible]			1,[illegible]	[illegible]	[illegible]
										2nd consideration										
Delta	1	560	0	590	100	690	307,921	122	309,043	830	0	0	72	14	2,[illegible]			244.48	93.17	2,835.07
Sub-total 2nd Prod.	1	560	0	590	100	690	307,921	[illegible]	309,043	830	0	0	72	14	2,[illegible]	0	0	[illegible]	[illegible]	[illegible]
Total 1st and 2nd Consideration	20	5,144	0	10,886	1,866	12,759	9,[illegible]	[illegible]	9,[illegible]	14,871	0	0	534	94	42,164.17	0	0	1,[illegible]	913.10	[illegible]
Grand Total	131	37,358	1,873	34,888	33,754	68,432	9,988,271	[illegible]	9,034,188	30,792	356	49	1,065	281	87,376.01	878.40	611.04	3,[illegible]	1,856.05	[illegible]

Table 46. - Local Control, Private Cooperation, Michigan, 1935.

County	No. of jobs	Acres of W.P. protected	Acres worked: Crew	Acres worked: Scout	Acres worked: Total	Ribes pulled: Crew	Ribes pulled: Scout	Ribes pulled: Total	Man Days: Private Labor	Man Days: FERA Labor	Man Days: NYA Labor	Man Days: State Super.	Costs: Private	Costs: FERA	Costs: NYA	Costs: State Super.	Costs: Total
LOWER PENINSULA (Initial)																	
Leelanau	1	2	10	80	70	977	0	977*	2	6	1	1	480	14.40	4.80	9.00	28.20
Total	1	2	10	60	70	977	0	977	2	6	1	1	480	14.40	4.80	9.00	28.20

*Includes 168 cultivated bushes.

Table 47. - Local Control, State Program, Michigan, 1935.

County	No. of jobs	Acres protected Priority: First	Acres protected Priority: Second	Acres worked: Crew	Acres worked: Scout	Acres worked: Total	Ribes pulled: Crew	Ribes pulled: Scout	Ribes pulled: Total	Man Days: State Labor	Man Days: State Super.	Costs: Labor	Costs: State	Costs: Total
LOWER PENINSULA (Initial)														
Ewington	4	68	0	0	1060	1060	0	0	0	0	2	0	14.40	14.40
Muskegon	6	4388	0	0	8390	8390	0	3554	3554	0	11	0	83.20	83.20
Total	10	4456	0	0	9450	9450	0	3554	3554	0	13	0	97.60	97.60

Table 48 - Summary, (1) Local Control Work, Situation 1965.

Agency	No. of jobs	Acres protected Priority First	Acres protected Priority Second	Acres worked Crew	Acres worked Local	Acres worked Total	Miles built Crew	Miles built Local	Miles built Total	Man Days Labor	Man Days Super.	Costs Labor	Costs Other	Costs Total
BLM-BLM	21	1,940	0	625	5,836	6,461	274,934	934	275,868	2,156	234	7,058.60	1,[illegible]	[illegible]
State-BLM	209	35,088	7,054	37,619	73,452	101,045	5,546,843	40,887	5,587,730	21,585	1,486	59,175.15	10,594.56	[illegible]
Forest-BLM	11	497	0	1,398	5,451	6,755	169,947	2,813	172,760	1,793	94	1,758.00	469.30	[illegible]
BIA	12	1,042	0	9,168	1,061	5,190	486,606	2,934	489,540	1,506	60	3,975.15	1,450.50	[illegible]
USDA	5	197	0	492	765	1,157	131,607	2,020	133,626	506	14	1,156.75	39.41	[illegible]
BPA	121	23,198	1,395	34,364	35,724	69,428	5,469,291	48,916	5,524,192	31,173	1,858	88,162.25	7,820.31	[illegible]
Private	1	8	0	10	80	90	977	0	977	9	1	24.00	8.00	[illegible]
State	10	4,468	0	0	9,450	9,450	0	3,374	3,374	0	13	0	97.60	[illegible]
Totals	[illegible]	[illegible]	8,449	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Summary of all Local Control Work Cost according to Agency

Agency	F.C.S.	B.C.F.	U.S.F.S.	F.S.W.A.	B.I.S.A.	B.P.A.	Private	State	Total
					Large Vehicles				
BLM-BLM	291.00	69.40	0	0	0	0	0	0	[illegible]
State-BLM	21,594.45	0	5,199.69	0	0	588.28	0	323.44	[illegible]
Forest-BLM	1,765.00	659.50	0	0	0	0	0	0	[illegible]
BIA	0	0	0	2,154.35	162.52	981.05	0	991.15	[illegible]
USDA	0	0	0	0	547.20	0	0	56.01	[illegible]
BPA	0	0	0	779.40	511.04	47,601.90	0	1,448.95	[illegible]
Private	0	0	0	14.40	6.50	0	4.80	8.00	[illegible]
State	0	0	0	0	0	0	0	97.60	[illegible]
Sub-total	10,488.15	535.90	0,974.69	3,025.15	827.56	49,054.51	4.80	1,903.00	[illegible]
					Small Vehicles				
BLM-BLM	3,997.50	168.50	145.09	0	0	0	0	0	[illegible]
State-BLM	10,569.45	0	3,685.36	0	0	0	0	0	[illegible]
BIA	0	0	0	901.80	144.00	0	0	368.05	[illegible]
USDA	0	0	0	0	994.80	0	0	0	[illegible]
BPA	0	0	0	0	0	44,451.89	0	215.10	[illegible]
Sub-total	[illegible]	168.78	3,877.47	901.80	1,060.80	44,451.89	0	2,001.15	[illegible]
Grand Total	74,702.40	1,495.20	2,906.16	6,798.95	1,694.36	93,450.00	4.80	4,227.15	[illegible]

Table 49. - Showing ownership of Land by Fire Acreage Protected by the various agencies in Michigan during 1935.

Agency	Nat'l. Forest	State Lands	County Lands	Municipal Lands	Private Lands	Total
ECW	1940					1940
State-ECW		34579		234	10529	45142
NIRA					177	177
FERA		40			1008	1048
WPA		2584	442	209	21563	24798
Parks-ECW		490			407	897
State		190			4278	4468
Private					2	2
Totals	1940	37,623	442	449	37,950	76,404
Percentage	2.5	48	.5	.5	48.5	100

Table 90. - Summary by years, Local Control, Michigan, 1928-1955, inclusive.

Year	Acres worked: Initial	Acres worked: Reworked	Acres worked: Total	Wells Drilled	Total Cost	Per Acre: Cost	Per Acre: Wells	Cost per bush.
1928	1300	0	1300	23051	92204	.46	18.4	.0063
1929	2520	40	2560	171872	320703	1.40	66.5	.0211
1930	2510	30	2540	175152	316194	.70	68.7	.0133
1931	18262	0	18262	302097	455902	.36	41.2	.0086
1932	16871	420	17291	1172145	708870	.41	67.8	.0060
1933	49000	1301	50301	3345987	2050920	.41	66.5	.0061
1934	171321½	4003	175324½	12721053	10371208	.59	72.5	.0099
1935	188184	7520	195704	13489471	13146586	.67½	68.9	.0112
Total	450903½	13453	464356½	32040647	28472819	.60½	69.	.0091

Table 5: Monthly results of local control work carried out by Water Boards.

Table 6: Summary results of local control work carried out by Water Boards.

Table 7: Monthly summary of local control work in analogue by all executive Boards, 1966.

Table 8: Monthly summary of local land water local control work was performed.

Table 9: Monthly summary by years of local control, 1966-1969, 1967 to 1969, inclusive.

Conclusion

The attitude of farming and the economic climate in the Irish Farmers Water Board are good if unfortunately thinner on not which notes is based on the assumption. Some notes have received a check and in the three counties they have reduced to a point where the total task of local line also, for some is 2/- or less, the work need is remarkable. Fortunately the extra market for the 1969 set the standards. A few of the late fall off during which some need reached official checks in the months of 1969 to determine the quality of work done.

The data on 1969 checks are given in this report.

Future conditions

In order that quality will also rise in the matter forest requirements, as stated in the Drainage Minister report, natural measures similar to local control are employed, requiring only from the landowner to make the work done in accordance therewith, and no other enforcement is taken by requiring all drains within 1000 feet contact of the canal but from permanent work. Provided to qualify for a grant eligible result, the Minister's approval of 1969 plan, a certain work pass federal inspection as required by Inland Committee for 1969. It is therefore necessary to reduce the level of line drain or other per area to a minimum consistent with requirements, a measure will result that is of greatly more. Because of these extra requirements a measure will result that is of greatly better result it will pass generation restrictions. All Surveyors authorised their carrying out instrument within at least one mile of the company.

It is imperative that surveyors which may make plans interested in Thoroughly planned up, reducing the cost of line drain or other per area to a minimum these points are raised monthly. The surveyors work to planned up and plan inspection work pass in the spring of 1969 so there is longer of other work attributed to the permanent issues.

Tertiary limitation was undertaken in seven districts (land improvement, Cartrolgary, Dunmore East Tyrrhanmore, Cooge, Cushkinny, Lord and Lower).

The activities tertiary drainage was partially worked in 1968 and completed work in 1969. In 1969 it was greatly achieved, after consultation a measure involving methods executing of the 1969 land connection work, until the matter was dealing other activities relating the works. Determined work was carried on the 1969, as work as the irrigation works expected, was sufficient for local 1969.

The work was supervised by a State [illegible] [illegible] [illegible]. Ribes were removed from this nursery [illegible] [illegible]. In spite of an interrupted supply of labor, the entire area was gone over twice. Although the Quarantine Inspector felt that as thorough a job as was humanly possible had been done, he did not recommend a pine shipping permit because of the lateness of the season in which Ribes eradication was done. It was recommended that the nursery be gone over again in the spring of 1936 because of the [illegible] sprouts and seedlings. No infection was found within a [illegible] distance of the nursery.

The Dummer State Forest Nursery, located near South [illegible], [illegible], was first eradicated in 1929, reworked in 1931 and partially reworked in 1932. This nursery was again gone over completely in 1934, it being necessary to do this to ensure the work done had been [illegible] satisfactorily attained.

The nursery was reworked this year, the work being done with [illegible] labor and local labor supervised by a [illegible] [illegible]. Ribes found were very small seedlings and sprouts. No infection was found in or near the nursery. This nursery was not given a shipping permit.

The [illegible] Federal Nursery was established early in the spring of 1935 and eradication was started as soon as Ribes came into leaf. Because of its proximity to swamps and [illegible], an unusually heavy concentration of Ribes was found within the 1500 foot zone. The ground was covered at least [illegible] and in some cases [illegible], which greatly reduced the [illegible] of Ribes [illegible]. The work was performed by a crew of from twenty-five to fifty [illegible] men, from [illegible] C.C.C. Camp, and was supervised by a Forest Service technical assistant aided by a [illegible]. Because of the heavy Ribes concentration, it will be necessary to go over this nursery again in the spring of 1936 and for several seasons thereafter. A federal white pine shipping permit has not been applied for.

A plan to reduce the nursery eradication has been considered, in which white pine is to be planted only in that part of the nursery which will involve the least amount of Ribes eradication in a [illegible] zone. Because of limited manpower, this plan was tentatively put into effect this year.

The [illegible] State Nursery at [illegible] [illegible] was first eradicated in 1929 and again in 1932. This nursery was extended about 500 feet northward in 1935, thus [illegible] the nursery [illegible].

Eradication work in 1935 was performed by [illegible] labor under the supervision of a [illegible] foreman. Few wild Ribes were found, all them being in scattered places. Several locations of cultivated Ribes were removed from the 1500 foot zone. This nursery was not given a federal shipping permit, not because of incomplete eradication work, but because the nursery does not grow pine for [illegible] [illegible].

The [illegible] Federal Nursery is located near [illegible], in [illegible] County, in the [illegible] [illegible] Forest. Eradication work was first accomplished in 1934. This nursery is ideally situated for the growing of white pine [illegible] because of the scarcity of Ribes in 75% of the zone. By confining the growing of white pine stock to the north third of the nursery, all of the eradication work in the swamp can be eliminated.

In 1935 eradication work was done by [illegible] labor from [illegible] C.C.C. Camp, and was supervised by a Nursery Assistant. A permanent control [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Between [illegible]

[illegible]

Table 51. - Nursery Sanitation Work Performed, Michigan, 1940.

Name	Organization	Program	Acres protected in Nursery	Acres Worked Crew	Acres Worked Scout	Acres Worked Total	Pitch Pulled Crew	Pitch Pulled Scout	Pitch Pulled C.F.C.	Pitch Pulled Other	Pitch Pulled Total	MAN DAYS LABOR S.C.F.	LABOR W.P.C.W.	LABOR FS-NYA	LABOR F.I.R.A.	LABOR F.E.R.A.	LABOR STATE	SUPERVISION Tech.NYA	SUPERVISION E.C.W.	SUPERVISION E.R.C.W.	SUPERVISION STATE	SUPERVISION NYA
									LOWER PENINSULA													
Seal	Duncan U.S.F.S.	ECW	30	300	0	300	13,569	0	3	14	13,586	931	0	41	0	0	0	0	49	0	6	0
Rogue	Mich.State College	NYA	33	27	420	447	641	13	0	16	669	0	0	0	0	15	0	0	0	0	0	4
Chittenden	Manistee U.S.F.S.	ECW	50	470	100	570	25,187	22	0	0	25,185	923	0	0	0	0	0	0	21	0	0	0
Both	Higgins State Forest	MSCW	10	54	330	384	33,925	0	0	0	33,925	0	745	0	0	0	0	0	0	38	0	0
Sub-total			140	841	840	1,781	75,360	40	3	30	75,963	1,854	745	41	0	15	0	0	43	38	6	4
									UPPER PENINSULA													
Manistique	Hiawatha U.S.F.S.	ECW	79	610	0	610	30,916	0	5	154	31,051	586	0	0	140	109	0	0	0	0	68½	35
Dunbar	Mich.State College	MSCW	2	200	22	222	5,829	0	0	0	5,829	0	321	0	0	0	23	0	0	15	5	0
Watermmet	Ottawa U.S.F.S.	ECW	7	173	40	232	317,439	0	0	13	317,452	1,959	0	0	0	0	0	35	35	0	0	0
Sub-total			88	983	62	1,064	353,184	0	5	167	355,355	2,495	321	0	140	109	23	35	35	15	73½	35
Grand Total			228	1,923	922	2,845	431,096	40	5	177	431,318	4,149	1,066	41	140	124	23	36	78	43	82½	43

COSTS

Name	LABOR COSTS E.C.W.	E.R.C.W.	FS-N.Y.R.A.	F.E.R.A.	STATE	S.T.R.A.	SUPERVISION COSTS E.C.W.	E.R.C.W.	STATE	Tech.NYA	F.I.R.A.	MCR(supplies,etc.)	TOTAL
							LOWER PENINSULA						
Seal	1,086.50	0	162.00	0	0	0	146.15	0	50.16	0	0	95.60	1,538.41
Rogue	0	0	0	55.25	0	0	0	0	0	0	17.44	0	72.69
Chittenden	1,384.50	0	0	0	0	0	142.28	0	0	0	0	16.50	1,543.28
Both	0	745.00	0	0	0	0	0	150.15	0	0	0	14.00	909.15
Sub-total	2,471.00	745.00	162.00	55.25	0	0	288.43	150.15	50.16	0	17.44	114.10	4,063.53
	W.E.C.W.						UPPER PENINSULA						
Manistique	789.00	0	0	347.60	0	546.55	0	0	311.00	0	247.65	0	2,241.80
Dunbar	0	321.00	0	0	66.00	0	0	81.00	65.00	0	0	0	533.00
Watermmet	2,953.50	0	0	0	0	0	194.26	0	0	308.16	0	186.00	3,641.92
Sub-total	3,742.50	321.00	0	347.60	66.00	546.55	194.26	81.00	376.00	308.16	247.65	186.00	6,416.72
Grand Total	6,213.50	1,066.00	162.00	402.85	66.00	546.55	482.69	231.15	426.16	308.16	265.09	300.10	10,480.25

Table B1 - Nursery Inventory, Michigan, 1989 to 1996.

Year and Location	Acres Year-end	Year Established	Acres Planted	Acres Grafted	Self-S. C. Pollen	Other Sibed Pollen	Wind S. C.	Chase	Owner	J.C.R. Fruitcap	Other Sales	Total
Dwight Lumbrey-MI	50	1987	1988	340	50	2,009	0	701.15	0	0	0	701.15
Dwight Lumbrey		2001	1992	40	0	1,500	[illegible]		[illegible]	0	0	[illegible]
		2002	1993	270	0	150	0	[illegible]	0	0	0	[illegible]
	10	2003	1994	300	0	3,110	0	0	0	116.50	0	116.50
	10	2004	1995	300	0	2,002	0	274.14	0	1,626.29	0	1,900.43
	[illegible]			[illegible]		[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
Schweitzer-MI	20	1987	1989	270	0	133,[illegible]	0	0	0	3,[illegible]	0	3,[illegible]
Schweitzer		2002	1990	190	0	25,[illegible]	0	0	0	1,[illegible]	0	1,[illegible]
	[illegible]			[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
Kindlinger-MI	[illegible]	1987	1989	300	0	92,[illegible]	0	0	0	1,540.[illegible]	0	1,540.[illegible]
Kindlinger		2000	1994	150	0	151,[illegible]	640.12	0	0	1,[illegible].44	0	1,[illegible].[illegible]
		2002	1995	110	0	31,[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]
	[illegible]			[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]
Schwenkel-MI												
Schwenkel	7	1987	1989	[illegible]	0	37,[illegible]		0	0	3,[illegible].0	0	3,[illegible].00
Sonnenschein	10	1987	1989	600	0	41,[illegible]	[illegible]	104.92	[illegible]	0	0	1,[illegible]
Tillmann (Bill)		2000	1993	50	0	[illegible]	0	334.14	[illegible]	0	0	[illegible]
	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	0	0	[illegible]
Tomasovic-MI	2	1987	1989	0	0	[illegible]	0	168.[illegible]	0	118.90	0	[illegible]
Tom Tomasovic		2000	1990	200	0	[illegible]	0	0	0	420.18	0	420.18
		2002	1991	150	0	[illegible]	0	111.00	0	400.00	0	[illegible]
	[illegible]			[illegible]		[illegible]						[illegible]
Vanderwerp		1987	1989	50		[illegible]	0	[illegible]	0	0	0	[illegible]
Vanderwerp		2001	1992	50		[illegible]	0	[illegible]	0	[illegible]	0	[illegible]
	1	2002	[illegible]	[illegible]	0	[illegible]			0	[illegible]		[illegible]
	[illegible]			501	0	[illegible]		[illegible]	0	[illegible]		[illegible]
W.F.J. Nursery-Stake	0	1987	1989	340	40	412	0	[illegible]	0	0	0	[illegible]
T. Vanzetti		2001	1991	4	0	10	[illegible]	[illegible]	0	0	0	[illegible]
	[illegible]	2002	1992	445	0	[illegible]	0	0	0	0	[illegible]	[illegible]
	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] seedlings which may have come up since the original eradication [illegible] originally [illegible] plantings [illegible] on Tables, [illegible]

The following list of tables [illegible]

Table A [illegible]
1950.

Table B summarizes the work [illegible]

Table C summarizes the work from [illegible] by counties.

Table D [illegible] analysis of the eradication records [illegible].

Reference is made to the following points in Table [illegible], Analysis of [illegible].

1. A much larger number of cultivated black currants was [illegible] Upper Michigan [illegible] Lower Peninsula. In Upper Michigan there is a large proportion of Finns and [illegible] who like their black currants.

2. [illegible] the number of [illegible] added to the number [illegible] the total in each county, the percent of [illegible] and [illegible], was approximately the same [illegible].

3. [illegible] since 1950 [illegible] in all counties. [illegible] the work. [illegible] necessarily [illegible].

4. It is interesting to note that no R. nigrum seedlings were found on the [illegible] in Lower Michigan. In Upper Michigan, in Marquette County, [illegible] R. nigrum seedlings were found.

5. For [illegible] in Upper Michigan and only one in the Lower Peninsula. On the basis of [illegible] Lower Peninsula. However, this difference [illegible] to a difference in [illegible].

6. There were a few plantings of R. nigrum established since the original eradication. However, in view of the large number of localities found originally the percentage is very low. It is concluded that the majority of plantings established since the original eradication [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	110	150	(Includes no cooperative control)						
[illegible]	[illegible]	502	5,180	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1,085	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 5. - [illegible]

County	[illegible]		[illegible]		[illegible]	
	Locations	Cases	Locations	Cases	Locations	Cases
Alcona	[illegible]	[illegible]			[illegible]	[illegible]
Alpena	[illegible]	[illegible]			[illegible]	[illegible]
Antrim	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arenac	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Baraga	[illegible]	[illegible]			[illegible]	[illegible]
Barry	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bay	[illegible]	[illegible]			[illegible]	[illegible]
Benzie	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Berrien	[illegible]	[illegible]			[illegible]	[illegible]
Bay	[illegible]	[illegible]			[illegible]	[illegible]
Charlevoix	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cheboygan	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chippewa	[illegible]	[illegible]			[illegible]	[illegible]
Clare	[illegible]	[illegible]			[illegible]	[illegible]
Clinton	[illegible]	[illegible]			[illegible]	[illegible]
Delta	[illegible]	[illegible]			[illegible]	[illegible]
Dickinson	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Eaton	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Emmet	[illegible]	[illegible]			[illegible]	[illegible]
Genesee	[illegible]	[illegible]			[illegible]	[illegible]
Gladwin	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Gogebic	[illegible]	[illegible]			[illegible]	[illegible]
Grand Traverse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Gratiot	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hillsdale	[illegible]	[illegible]			[illegible]	[illegible]
Ionia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Iosco	[illegible]	[illegible]			[illegible]	[illegible]
Iron	[illegible]	[illegible]			[illegible]	[illegible]
Isabella	[illegible]	[illegible]			[illegible]	[illegible]
Jackson	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Kalamazoo	[illegible]	[illegible]			[illegible]	[illegible]
Kalkaska	[illegible]	[illegible]			[illegible]	[illegible]
Kent	[illegible]	[illegible]			[illegible]	[illegible]
Keweenaw	[illegible]	[illegible]			[illegible]	[illegible]
Lake	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lapeer	[illegible]	[illegible]			[illegible]	[illegible]
Leelanau	[illegible]	[illegible]			[illegible]	[illegible]
Lenawee	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Livingston	[illegible]	[illegible]			[illegible]	[illegible]
Luce	[illegible]	[illegible]			[illegible]	[illegible]
Mackinac	[illegible]	[illegible]			[illegible]	[illegible]
Macomb	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Manistee	[illegible]	[illegible]			[illegible]	[illegible]
Marquette	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mason	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mecosta	[illegible]	[illegible]			[illegible]	[illegible]
Menominee	[illegible]	[illegible]			[illegible]	[illegible]
Midland	[illegible]	[illegible]			[illegible]	[illegible]
Missaukee	[illegible]	[illegible]			[illegible]	[illegible]
Monroe	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Montcalm	[illegible]	[illegible]			[illegible]	[illegible]
Muskegon	[illegible]	[illegible]			[illegible]	[illegible]
Newaygo	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oakland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oceana	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ogemaw	[illegible]	[illegible]			[illegible]	[illegible]
Ontonagon	[illegible]	[illegible]			[illegible]	[illegible]
Osceola	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oscoda	[illegible]	[illegible]			[illegible]	[illegible]
Otsego	[illegible]	[illegible]			[illegible]	[illegible]
Ottawa	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Presque Isle	[illegible]	[illegible]			[illegible]	[illegible]
Roscommon	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Saginaw	[illegible]	[illegible]			[illegible]	[illegible]
Sanilac	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
St. Clair	[illegible]	[illegible]			[illegible]	[illegible]
Schoolcraft			[illegible]	[illegible]	[illegible]	[illegible]
Shiawassee			[illegible]	[illegible]	[illegible]	[illegible]
Tuscola					[illegible]	[illegible]
Wayne	[illegible]	[illegible]			[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 56. — [illegible]

[illegible]

County	Original County Tree [illegible]	Original County Production [illegible]		Direct Or-[illegible]		Tumbling [illegible]		Uncoupled [illegible]		Turned Trees Original [illegible]		Trees Not Turned Back		Brief on Ground [illegible]		[illegible]	
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
								Total Percent									
[illegible]	1890	39	486	2	4	0	0	0	1	1	0	1	1	1	11.1	[illegible]	
[illegible]	1913	80	180	2	10	0	0	0	0	4	6	8	16	9.4	[illegible]		
[illegible]	1890	241	1,805	1	8	0	0	2	3	4	28	6	88	8.7	[illegible]		
[illegible]	1880	301	1,098	2	41	0	0	0	0	8	4	15	70	8.3	[illegible]		
[illegible]	1890	198	1,174	2	0	0	0	0	0	1	0	2	0	10.0	[illegible]		
[illegible]	1900	210	1,000	2	7	0	0	0	[illegible]	1	7	3	17	[illegible]	[illegible]		
[illegible]	1890	45	[illegible]	2	7	0	0	[illegible]	0	2	7	4	7	[illegible]	[illegible]		
[illegible]	1910	42	301	18	100	0	0	0	0	2	100	26	83	13.1	[illegible]		
[illegible]	1900	80	818	11	7	0	0	0	0	0	7	74	77	[illegible]	[illegible]		
[illegible]	1910	48	400	18	100	[illegible]	7	[illegible]	[illegible]	1	1	10	100	10.1	[illegible]		
[illegible]		[illegible]	[illegible]	7	[illegible]												

[illegible] counties of [illegible] Twenty-two [illegible] field and [illegible] [illegible]
[illegible] not [illegible]

County	Original County Tree [illegible]	Original County Production [illegible]		Direct Or-[illegible]		Tumbling [illegible]		Uncoupled [illegible]		Turned Trees Original [illegible]		Trees Not Turned Back		Brief on Ground [illegible]		[illegible]	
								Total Percent									
[illegible]	1890	107	1,000	11	18	0	[illegible]	11	[illegible]	1	1	11	80	[illegible]	[illegible]		
[illegible]	1901	911	1,001	4	110	0	[illegible]	101	100	8	1	[illegible]	1,100	[illegible]	[illegible]		
[illegible]	1890	117	[illegible]	8	144	1	[illegible]	11	11	1	11	[illegible]	[illegible]				
[illegible]		[illegible]	[illegible]									7	[illegible]				
[illegible]											11			11			

Experimental Work

Check Plots:

Permanent Ribes check plots have been established on a number of areas for the purpose of determining what happens to [illegible] of Ribes by eradication after the area is worked. These plots are established in the various Ribes types and are definitely marked with permanent stakes. The eradication crew in the areas where these plots are, therefore, works this ground as it does the rest of the type. Data is taken before and after eradication, listing the type, degree of density, and feet of live stem by Ribes species. The data will be analyzed each time to be able to determine degree of Ribes regeneration. This data will give an excellent idea of what really happens after a area has been gone over. These plots are not used to check the quality of work done in the area but only to determine the date of second eradication.

Study Plots:

A number of blister rust damage study plots have been established wherever [illegible] and the [illegible] infection on pine has been found. [illegible] have been made on these areas for the purpose of determining amount, date and spread of infection, and the damage and results of control.

Two new areas were found and established this year; namely, the [illegible] and [illegible] Lake areas in [illegible] County. Infection on [illegible] follows the [illegible] of wild Ribes growing under the pines.

Blister damage study plots on which infection data are taken are:

[illegible] Area - At [illegible], in [illegible] County
Deer Lake Area - In [illegible] County
[illegible] Area - At [illegible], in [illegible] County
Gull Lake Area - East of [illegible], in Marquette County
[illegible] Area - Southwest of [illegible], in Marquette County
[illegible] Area - North of [illegible], in Houghton County

In addition to being experimental plots for the study of pine infection, these plots are being used as demonstration areas to the public and cooperators to show the seriousness of the disease. All plots are easily accessible, and [illegible]

Informational Activities

The blister rust control program, like any other public undertaking, is greatly dependent upon public cooperation for its success. It is, therefore, essential that the public be kept informed relative to the disease and the progress of control work. This has been done through direct contacts, distribution of literature, newspaper articles, [illegible], window displays, exhibits at fairs, radio talks, and addresses to schools and organizations.

Of particular interest were the [illegible] signs placed along the highways illustrating the necessity for [illegible] Many people, whose curiosity prompted them to go in and visit the areas were rewarded with first-hand information about actual field work. An invitation is [illegible] extended to the public to visit our field camps at any time and observe the procedure followed in the control activities [illegible]

Training of Personnel

At the beginning of each evaluation season, it is necessary to train the men to operate the evaluation screen. This training is performed at Chilliwack which is various parts of the State under guidance provided by [illegible] instruction by experienced teachers. Two-thirds of schools are built one for the purpose of training personnel in this field of evaluation only the other to work and in addition about current evaluation.

Field methods are learned, and the men are impressed with the critical aspects of time. Indeed field work for a short period requires there [illegible] of the various phases of the work and making them [illegible] under their supervision.

A list, schools men will be the following lessons:

Day - Instructor Prime, Grading (Attendance 50)
Night - Check current school at Indianapolis (Attendance 27)
Day - Check current school at Fox Chapel (Attendance 1)

In addition to these courses, also [illegible] was initiated [illegible] in the field when it was not practicable to call them together.

A general meeting of all the supervisory personnel of the State was held at central place, here [illegible], for the purpose of discussing the various [illegible] laws and standardizing the procedure throughout the State.

A meeting of the lower Delaware was held in [illegible] to discuss [illegible] which a visit was made to the building inspection area. Today the [illegible] on plan budget to classify this information on the [illegible].

Cost

Through the cost record system established all changes [illegible] activity of the general control program was validated for the year according [illegible] was always participating.

In table 17 all expenditures are listed according to the agency performing [illegible] the type of labor classification and the [illegible] work is [illegible] [illegible].

In Table 18 these costs are represented as percentages of expenditures [illegible] each agency spent on each activity while in table 19 the percentages of each [illegible] expenditure spent by each agency are given.

Conclusion

The initial [illegible] plan program has been completed in [illegible] important while nine months error of the Water.

There was a considerable diversification of activities on plan [illegible] throughout the State which [illegible] that many agencies [illegible] plan [illegible] and [illegible] to [illegible] the initial evaluation program [illegible] and a maintenance program established.

Table [illegible] - Expenditures for all related pest control programs in Michigan, [illegible]

Year	Program	Pest Control Program Publicity	Conservation Education	U.S. Agent Information	Other Pest Control	Monitoring Pest Control	C.A.U.C. Diagnostic Clinic	Demonstration Station Program	Cooperative	Other Plant Pest	Equipment & Other
[illegible]	Collected	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
	Expended	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	Collected										
[illegible]	Expended										
	Total	[illegible]									
[illegible]	Collected				[illegible]	[illegible]					
[illegible]	Expended				[illegible]	[illegible]					
	Total				[illegible]	[illegible]					
[illegible]	Collected				[illegible]	[illegible]					
[illegible]	Expended										
	Total				[illegible]	[illegible]					
[illegible]	Collected				[illegible]	[illegible]					
[illegible]	Expended				[illegible]	[illegible]					
	Total				[illegible]	[illegible]					
[illegible]	Collected	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	Expended	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	Collected	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	Expended	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			

TABLE [illegible]. - [illegible] OF [illegible] EXPENDITURES [illegible] BY [illegible] GROUPS, [illegible], [illegible]

Agency	Commodities	[illegible] Grants-in-aid	Other Contributions	Subsidy Contributions	[illegible] Distributions	Transportation Services Supply	Construction	Other Expenses Claim [illegible]	Other Expenses & [illegible]	Total
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]	[illegible]									[illegible]
[illegible]			[illegible]	[illegible]						[illegible]
[illegible]			[illegible]	[illegible]						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]			[illegible]				[illegible]
[illegible]				[illegible]						[illegible]
[illegible]				[illegible]						[illegible]
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]

TABLE [illegible] - [illegible] of [illegible] of Test Lessons [illegible] in Each Activity, [illegible], [illegible]

Lesson	Conversation	[illegible] and [illegible]	Video Broadcasting	Tuesday Test Session	[illegible] Discussion	Experimentation/Setting Survey	Checklist	Photo Frame Make	Equipment & Disc	Total
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]	[illegible]									[illegible]
[illegible]			[illegible]	[illegible]						[illegible]
[illegible]			[illegible]	[illegible]						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]							[illegible]
[illegible]			[illegible]	[illegible]		[illegible]				[illegible]
[illegible]				[illegible]						[illegible]
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

To date 29,000,000 Kibes have been removed from 472,440 acres of land in giving protection to white pine stand in Michigan. Approximately 41 percent of these results were realized in 1955.

BLISTER RUST CONTROL, WISCONSIN, 1934

History of the Rust

Blister rust was first found in the state by Mr. Wallace at Amery (Polk County) in 1915. This infection was on imported white pine.

Little state official effort was made to control the disease until 1919 when the state legislature appropriated $7,500. This amount was appropriated during each of the two succeeding fiscal years and cut to $4,000 for the years of 1921, 1922 and 1923. After 1923 no legislative appropriations were made except those through the Wisconsin Department of Agriculture and the Conservation Department. A limited amount of funds were set aside from 1923 to 1930 by the Federal Government.

In 1930 a definite white pine blister rust control program was adopted and a permanent state supervisor was appointed to direct all control activities in the State. During 1930 and 1931 a slight increase in cooperative funds was available. During 1932 a somewhat greater increase in funds was made by State and Federal Departments as well as from individual white pine operators. The 1933 program took on added proportions with funds appropriated by the Wisconsin Department of Agriculture and Markets, by the Wisconsin Conservation Department, by the Federal Civil Works Administration, by the Federal Emergency Conservation Work program, and by the National Recovery Administration through the Division of Plant Disease Control of the U. S. Department of Agriculture.

In 1934 the control program was continued with even greater force than in 1933. In addition to the 1933 agencies participating again in 1934 there was added to the 1934 control results the work done through natural relief agencies. The new agencies participating for the first time were Federal Drought Relief, County and Federal ERA and Wisconsin Forest Crop Law. The combined results realized in 1934 were very gratifying.

Organization

In 1911 when State and Federal officials learned that white pine blister rust existed in a pine stand near Amery, Wisconsin, in Polk County, they immediately made an attempt to eradicate the disease by cutting and burning all white pines and Ribes in the immediate vicinity. This attempt proved futile, however, for in 1917 and 1918 a survey of pine stands in adjoining counties disclosed that the rust from Polk county already had spread to other counties. This confirmed the suspicion that white pine blister rust could not be eliminated in Wisconsin but that it would have to be controlled. Therefore, beginning with the autumn of 1918 all effort was placed on disease control through work with the host plant Ribes rather than on continuing the early attempt to eradicate the disease itself. The method of control adopted by State and Federal officials was removal of the alternate plant host, the Ribes bush. This method proved very successful, and it is still the key to the control of this major plant disease.

During the period 1920 to 1931, inclusive, systematic Ribes eradication was conducted on approximately [illegible],000 acres. In 1931 there were 19,[illegible] acres

initially worked. During 1934 approximately [illegible] were placed at [illegible] of cooperative control projects. Ideal tools are pulled up by hand, consequently, blister rust control has proven itself an ideal type of work for relief labor.

Control work is supervised by a permanent state leader whose salary and expenses are borne by the U. S. Department of Agriculture. The leader works under the immediate supervision of the State Entomologist. Working under the Memorandum of Understanding between the Federal Government and the Wisconsin Department of Agriculture and Markets together with the Conservation Department and by the authority vested in the two latter Departments by Statutes, Section 93.07 (subsections 1 and 12), control work was accomplished in 1935 with funds from the following agencies:

Wisconsin Dept. of Agriculture & Markets
Wisconsin Conservation Department
U. S. Department of Agriculture
Federal Emergency Relief Administration
County Emergency Relief Administration
Private Cooperation
Federal Drought Relief Administration
Wisconsin State Prison
National Recovery Administration
Works Progress Administration and
Federal Emergency Conservation Work as sponsored by Federal Forest Service, Indian Service and State Conservation Department.

These agencies assumed certain responsibilities and supplied personnel as follows:

The United States Department of Agriculture, through the Division of Plant Disease Control of the Bureau of Entomology and Plant Quarantine, assumed responsibility for blister rust control leadership, and for supervision of informational and service work in the state. The Regional Director of the Bureau's central region, which comprises the states of Illinois, Iowa, Indiana, Minnesota, Missouri, Ohio and Wisconsin, contributes valuable advice and assistance in the formation of plans for blister rust control work in the state.

The state supervisor is directly responsible for all blister rust control work in Wisconsin and is responsible for the general plan. He organizes and directs the activities of the blister rust control personnel and must maintain adequate field and office records of the work performed.

The state supervisor is assisted by three full-time agents on Works Progress Administration funds, four Checkers and one Technician appointed on Emergency Conservation Work funds. One agent, who was responsible for this report, the data used in the table, is assigned at headquarters to the state supervisor while the other two agents are in direct charge of districts. Under the full time agents the state foreman and other federal agents, usually temporary employees, who make reconnaissance of plantations and inform the owners whether control work is or is not necessary. If blister eradication work is needed and appears practical, they direct the laborers furnished by the owners or by county, state or federal agencies.

The four checkers were assigned by the Wisconsin [illegible] Director to district forest and plant disease control headquarters for the Wisconsin Conservation

Department E.C.W. camps. Each checker is in direct charge of the work on four, five, or six camps. Before control work on a new problem is undertaken samples of the insect or disease responsible for the damage are forwarded to the state supervisor. The samples are referred to the Wisconsin State Entomologist who identifies the insect or plant disease and then recommends the proper control procedure.

The E.C.W. Technician is in direct charge of white pine blister rust control work on the Chequamegon and Nicolet National Forests of the United States Forest Service. E.C.W. insect and plant disease control foremen are assigned to those Emergency Conservation Work camps located in white pine regions which are administered by the Wisconsin Conservation Department. The Conservation Department has granted authority to the State Entomologist to change the insect and plant disease control foremen for each camp, subject, of course, to the approval of the Wisconsin Conservation Department and the U. S. Forest Service. The four checkers are in immediate charge of E.C.W. insect and plant disease control work in the Conservation Department E.C.W. camps, however, they work in close cooperation with each camp superintendent concerned. During 1935 most of their effort has been placed on white pine blister rust control.

Each A.C.W. foreman makes a pre-eradication survey of the valuable white pine areas within working radii of his respective camp. To estimate the number of C.C.C. labor necessary to protect the pines he directly supervises blister eradication work, and keeps an eye on the effectiveness of such work. The E.C.W. Checker, however, systematically inspects each area worked; consequently, he is held accountable for all work he has inspected and approved. During 1935 Wisconsin Conservation Department E.C.W. Camps had insect and plant disease control foremen.

In U. S. Forest Service camps the E.C.W. Technician was in direct charge of blister rust control activities. Two part-time checkers hired on Forest Service E.C.W. funds assisted. Technical foremen considered best fitted for the job by the camp superintendent were temporarily assigned to perform control work at those camps where such work was necessary. When the foreman completed the blister rust assignment he reverted back to his regular duties.

Two Indian Reservations performed blister rust control work under the U. S. Indian Service E.C.W. program. The supervisory personnel was employed merely for the Ribes eradication season.

The foreman and his two assistants on the Red River Indian Reservation were appointed on N.R.A. funds since tribal land and the land owned by white citizens was so intermixed that it was impractical to work one ownership without working the other. After June 30 N.R.A. funds were no longer available, therefore, these foremen were transferred to the U. S. Indian Service and paid from I.E.C.W. funds. The actual Ribes eradication work was done by some 100 Indians hired on I.E.C.W. funds.

The blister rust control project on the Menominee Indian Reservation was supervised by a white foreman and two Indian assistants hired on I.E.C.W. funds. The foreman was held responsible for conducting intensive checks of the pine areas worked by the Indian crews in order to insure efficient control work. Since a solid tract of land owned and managed by the Menominee Indians comprises the Reservation, funds for both labor and supervision were furnished by the Indian Service E.C.W.

Table 60 shows the approximate number of men by class of position employed by the various agencies during the various months of the 1935 calendar year.

STATUS OF THE RUST

Since 1915, when the first infection center was discovered in Polk County, the rust has spread virtually over the entire range of white pine in Wisconsin. Up to December 31, 1935, rust, either on pine or Ribes, or both, has been found in a total of 43 counties in Wisconsin, 28 counties having infection on both pine and Ribes.

During 1935 blister rust was observed for the first time on white pine in Rusk county and on Ribes in Iron, Gogebic, and Menominee counties. Furthermore, many new infection centers were located in unprotected pine stands in counties where blister rust had been reported previously, denoting greater intensification of the disease. Pine infections were found quite generally distributed in some counties where only a few pine infections had been found previously. These new pine infection centers were observed in connection with pre-eradication surveys and Ribes eradication work since no special funds were devoted to scouting for the disease during 1935.

A severe pine infection center was found in an unprotected pine stand in Portage county. The geographic location of this pine area, which comprises several ownerships and a total of some 200 acres, is Section 8, Township 24 North, Range 10 East of the Fourth Principal Meridian. It is a comparatively recent infection area; consequently, it has considerable value for observation purposes. From it information may be obtained on rust intensification and on effectiveness of control work performed by a Ribes eradication crew composed of men taken from the relief rolls. Study plots were established on this area by representatives of the Regional Office in cooperation with the Wisconsin Blister Rust Control Organization. This phase of the work is described later in this report as a separate subject under "Investigational Activities."

Details of the new infection centers found during 1935 are as follows:

--- Infections Found in New Counties During 1935 ---

On White Pine

1. Rusk County: Spot infection discovered in T35N R7W Section 2, NE-NW, by Agent Darrel L. Slocum, on December 29, 1935. Only one white pine was found infected, said white pine had a stem canker about two inches in diameter. It was located in a windbreak at an abandoned farmyard across the road from the residence of M. G. Atkins.

On Ribes Only

1. Iron County: Heavy rust infection discovered on 16 Ribes nigrum bushes on the property of J. Vallie, Gile mining region, Montreal, Wisconsin, by Agent Walter Manning, on August 27, 1935. All bushes were removed. Subsequent infections were reported found on scores of Ribes nigrum bushes by Mr. Manning and his cultivated black currant eradication crews.

Table 60. - Approximate Number of Men Employed on Blister Rust Control Activities in Wisconsin, 1935.

Program	Position	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Approx. No. Man Months
Regular	State Leader							1	1	1	1	1	1	6
N.I.R.A.	State Leader	1	1	1	1	1	1							6
	Dist. Agents	3	3	3	3	3	3							18
	Supervisors	3	3	4	3	3	3							19
	Foremen					12	12							24
	Laborers					31	44		1	1				77
	Sub-total	7	7	8	7	50	63		1	1				144
F.E.R.A.	Laborers	27	71	29	53	89	127	32	32					460
F.S.-E.C.W.	Technician	1	1	1	1	1	1	1	1	1	1	1	1	12
	Checker					1	1	1	1	1				5
	Tech. Foremen					3	3	7	8	4				25
	Laborers					50	124	154	160	46				536
	Sub-total	1	1	1	1	55	129	163	170	34	1	1	1	578
State E.C.W.	Checkers	4	4	4	4	4	4	4	4	4	4	4	4	48
	Tech. Foremen	2	3	3	2	15	15	14	10	16	17	5	5	107
	Laborers	15	19	12	12	339	351	302	318	239	151	9	15	1,782
	Sub-total	21	26	19	18	358	370	320	332	259	172	18	24	1,937
I.S.-E.C.W.	Manager		1	1	1	1	1	1	1	1	1	1	1	11
	Checkers							2	2	2				6
	Foremen							4	4	4				12
	Laborers		1	1	1	147	202	203	173	102				830
	Sub-total		2	2	2	148	203	210	180	109	1	1	1	859
State	Foremen							3						3
State Prison	Laborers					10	5							15
W.P.A.	Dist. Agents													
	Supervisors								5	5	7	7	7	35
	Relief Professional										2	4	5	11
	" Skilled								35	74	87	60	53	309
	" Intermediate								57	109	105	3	6	280
	" Unskilled								277	596	572	114	98	1,657
	Sub-total								377	791	776	191	172	2,302
	State Total	56	107	59	81	710	897	729	1,093	1,215	951	212	199	6,309
All Programs	Appointees-State Leader	1	1	1	1	1	1	1	1	1	1	1	1	12
	Dist. Agents	3	3	3	3	3	3		3	3	3	3	3	33
	Supervisors	8	9	10	9	10	10	9	14	18	13	13	13	136
	Foremen	2	3	3	2	30	30	28	22	24	17	5	5	171
	Sub-total	14	16	17	15	44	44	38	40	46	34	22	22	352
	Labor-Professional										2	4	5	11
	Skilled								35	74	87	60	53	309
	Intermediate								57	109	105	3	6	280
	Unskilled	42	91	42	66	666	853	691	961	986	723	123	113	5,357
	Sub-total	42	91	42	66	666	853	691	1,053	1,169	917	190	177	5,957
	State Total	56	107	59	81	710	897	729	1,093	1,215	951	212	199	6,309

E. Outagamie County: Spot infection found on Ribes cynosbati in T22N R18E Section 4, NE-SE, by agent George O. Hill, on September 16, 1935.

F. Waukesha County: Infection found on one Ribes hirtellum bush in T8N R9E Section 5, NE-SE, by District Agent Ray Weber, on August 26, 1935. Additional infections were observed by Mr. Weber in T20N R18E Section 5, SW-SE, on September 24, 1935.

The present status of infection in Wisconsin counties, classified according to year infection was first found, is summarized in Table 61.

WHITE PINE ACREAGE

Wisconsin has been specially favored with natural resources, one of the predominant of these being vast areas of valuable white pine forests. From 1830, when the first sawmill was erected in Wisconsin, to 1900 most of the lumber cut in the State consisted of white pine. The peak year was reached in 1892 when more than four billion board feet of timber were cut.

Within the state there are established thousands of acres of immature native white pine and many thousands of acres of natural white pine reproduction, but today only a few of the virgin pine stands remain. In addition to this tremendous acreage of native white pine several millions of white pine seedlings are planted yearly by private, county, and Federal agencies. The trees in these stands must be kept healthy until they reach maturity if they will help to furnish the forest products necessary to industry in Wisconsin. The commercial value of good quality white pine generally is recognized, however aside from its commercial value white pine has a real but intangible aesthetic value. Coniferous forests lend a much greater appeal to recreationists than do hardwood forests since coniferous forests are all-year forests while hardwood stands during their leafless period lose much of their attractiveness.

The latest estimate of acres of white pine in Wisconsin, based on all available information including pine mapped by the blister rust control supervisory personnel under various emergency relief programs, is as follows:

1st and 2nd Priority White Pine which justifies protection	327,080 acres
Additional 2nd Priority White Pine.	857,850 acres
Scattered White Pine.	730,000 acres
Total White Pine	1,914,910 acres

The first and second priority white pine is located and mapped for protection purposes, but the scattered pine is too scattered to protect or even to map; nevertheless, these scattered pines possess considerable value as seed-trees aside from their commercial and aesthetic values.

The minimum requirements for the various degrees of pine priority are considered in detail in the preliminary section of this general report.

In Table 62 white pine, by priority classes, and tabulated by ownership, in counties is given for the entire state.

The outline map of Wisconsin shows in addition to total county pine

Table 12.- [illegible] of infection in [illegible] counties [illegible] according to year infection was first found.

Year	County	Since Infect. only	Since and Prior Infection. Year Infection First Found										
			'16	'18	'19	'20	'24	'30	'31	'32	'33	'34	'35
1915	Polk		X										
1916	Burnett			X									
	Clark							X					
	Dane						X						
	Hancock											X	
	Dodge								X				
	Pierce								X				
	Rusk												X
	Shawano					X							
	St. Croix			X									
	Washburn									X			
	Barron			X									
1918	Chippewa								X				
1920	Langlade					X							
1928	Marquette								X				
1929	Florence	X											
	Forest									X			
1930	Douglas							X					
	Eau Claire	X											
1931	Oneida	X											
	Jackson											X	
	Oconto								X				
1932	Ashland									X			
	Brown	X											
	Door	X											
	Grant	X											
	Iron	X											
	Lafayette	X											
	Lincoln											X	
	Marinette	X											
	Portage									X			
	Vernon								X				
	Wood								X				
1933	Marinette									X			
	Langlade	X											
	Oneida											X	
	Price	X											
1934	Adams											X	
	Price	X											
	Taylor											X	
1935	Iron	X											
	Outagamie	X											
	Waushara	X											
Total		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 42. - Estimates of White Pine Areas in Wisconsin Classified According to Counties and Ownerships

County	Acres of First and Second Priority White Pine Which Justifies Protection: County & Private	State	Federal Forests	Indian Lands	Total	Acres of Additional Second Priority White Pine: County & Private	State	Federal Forests	Indian Lands	Total
Adams	4,500				4,500	4,000				4,000
Ashland	4,500	200	600	2,000	9,300	4,100	100	300	1,200	9,[illegible]
Barron	5,500				5,500	5,000				5,000
Bayfield	16,075	1,000	5,500	100	22,675	5,450	500	5,100	100	11,[illegible]
Brown	1,450	50			1,500	8,000				8,000
Buffalo	600				600	500				[illegible]
Burnett	4,500				4,500	4,500				4,500
Calumet	100				100	100				100
Chippewa	6,500	400			7,300	5,[illegible]	500			[illegible]
Clark	4,500				4,500	4,500				4,500
Columbia	2,500				2,500	2,000				2,000
Crawford	100				100	100				100
Dane	625	25			650	1,[illegible]				1,[illegible]
Dodge	100				100	100				100
Door	2,600	900			3,500	1,600	400			2,000
Douglas	8,500	500			9,000	6,500	500			6,000
Dunn	5,900	100			6,000	2,900	100			3,000
Eau Claire	2,000				2,000	2,000				2,000
Florence	4,500	400			5,000	3,600	400			4,[illegible]
Fond du Lac	100				100	100				100
Forest	6,400	100	500		7,000	7,200	800	500		8,[illegible]
Grant	150	50			200	250	50			300
Green	100				100	100				100
Green Lake	800				800	1,000				1,000
Iowa	175	25			200	200				200
Iron	3,500	300		500	4,300	4,400	500		100	5,000
Jackson	8,000	500			8,500	4,400	600			5,000
Jefferson	100				100	100				100
Juneau	3,000	500			3,500	4,000	700			5,[illegible]
Kenosha	100				100	100				100
Kewaunee	1,500				1,500	1,300				1,[illegible]
La Crosse	500				500	300				300
Lafayette	100				100	100				100
Langlade	[illegible]	50			[illegible]	[illegible]	[illegible]			[illegible]
Lincoln	[illegible]	50			[illegible]	[illegible]	[illegible]			[illegible]
Manitowoc	1,100				1,100	1,000				1,000
Marathon	3,300				3,300	1,000				1,[illegible]
Marinette	8,000	500			8,500	7,500	1,000			8,[illegible]
Marquette	1,500				1,500	1,[illegible]				1,[illegible]
Milwaukee	200				200	150				150
Monroe	6,500	500			7,000	4,500	500			5,000
Oconto	900	800	400	3,500	7,000	600	500	500	5,100	6,[illegible]
Oneida	16,000	2,000			18,000	16,500	3,500			20,000
Outagamie	1,500				1,500	1,500				1,500
Ozaukee	500				500	500				500
Pepin	1,455				1,455	2,000				2,000
Pierce	1,500				1,500	1,000				1,500
Polk	6,500	500			7,000	5,500	500			6,000
Portage	7,500				7,500	5,000				5,000
Price	8,500	500	500		9,500	4,900	500	500		6,[illegible]
Racine	100				100	100				100
Richland	500				500	500				500
Rock	100				100	100				100
Rusk	3,500	500			4,000	5,500	500			6,000
Sauk	3,100	800			3,900	1,700	300			2,000
Sawyer	15,790	200	1,500	1,350	25,640	15,050	500	850	500	16,[illegible]
Shawano	15,005			10,450	25,455	3,250			21,750	25,000
Sheboygan	3,400	100			3,500	1,500	500			2,000
St. Croix	2,000				2,000	6,000				6,000
Taylor	2,400	100			2,500	5,500	500			6,[illegible]
Trempealeau	350	50			400	450	50			500
Vernon	100				100	100				100
Vilas	22,650	7,000	700	1,150	30,500	10,000	10,000	150	1,000	20,[illegible]
Walworth	100				100	100				100
Washburn	5,500				5,500	2,500				2,500
Washington	100				100	100				100
Waukesha	100				100	100				100
Waupaca	7,900				7,900	4,000				4,000
Waushara	3,000	200			3,200	2,500	600			3,[illegible]
Winnebago	1,125				1,125	1,000				1,000
Wood	5,900	200			6,100	2,600	400			3,000
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Acres of First and Second Priority White Pine. 527,060
Acres of Additional Second Priority White Pine 287,850
Acres of Scattered White Pine. 700,000
Total. 1,514,910

[illegible] portion of the pine that has been given [illegible] and [illegible]. The cross hatching indicates the counties where pine or fiber infestation has been noticed prior to December 31, 1936.

PRE-ERADICATION SURVEY

During 1935 under the various emergency relief programs pre-eradication survey work was performed on a total of 57,[illegible]00 acres.

Tables 33 and 34 list by programs the total acreage of white pine mapped and covered by pre-eradication surveys.

Before and after the fiber eradication crews three of the supervisory personnel who were not assigned to cultivated black currant elimination work devoted their time to pre-eradication survey work. As the name implies, a pre-eradication survey consists of the following: making a detailed map of first and second priority white pine areas and of the protective zone surrounding the pine, classifying the area mapped according to definite fiber types, determining what portions of the area require crew work and what portions require scout work, and estimating the number of man-days of labor required to perform fiber eradication.

There appears to be a close correlation between the forest flora of a given locality and the fiber species and their abundance within a given locality. Due to this correlation, a known forest association indicates the presence of a specific fiber type.

Whether a pine stand is or is not considered of sufficient value to warrant the cost of protection depends chiefly upon the size of the stand, upon the number of trees per acre and their size and quality, and upon the use and value of such trees to the owner and to the community. No hard and fast rule is established which will govern allowable expenditures for control work on every pine area surveyed. For the sake of guidance and uniformity, however, the following principles, approved at the North Central Tables meeting in 1935, are used as a guide in Wisconsin.

For first priority white pine areas fiber eradication work is conducted for a distance of 900 feet from such pine except where live swamp is encountered, in which case the distance to work may be reduced to 300 feet. Fiber in the live swamp should never at the rate of 300 per acre or over before reduction in the protective zone is advisable.

For second priority white pine areas fiber eradication work is performed for a distance of 900 feet from the pine except for live swamp which should remain untouched. Scattered white pine ordinarily will remain untouched; however, if such stands can be protected chiefly by scouting, prevention costs may be justified.

LOCAL CONTROL

Local control of white pine blister rust refers to the removal of fiber hosts within infecting range of the white pine stands. The elimination of fiber for a distance of 900 feet from the pine stands has been found sufficient in Wisconsin. This rule applies to all fiber except the European black currant which needs be removed for a distance of one mile. Under certain forest conditions the protective zone may be reduced to 300 feet and still afford pro-

Table 53. - White Pine Location and Pre-eradication Survey
Wisconsin, 1935
All Agencies

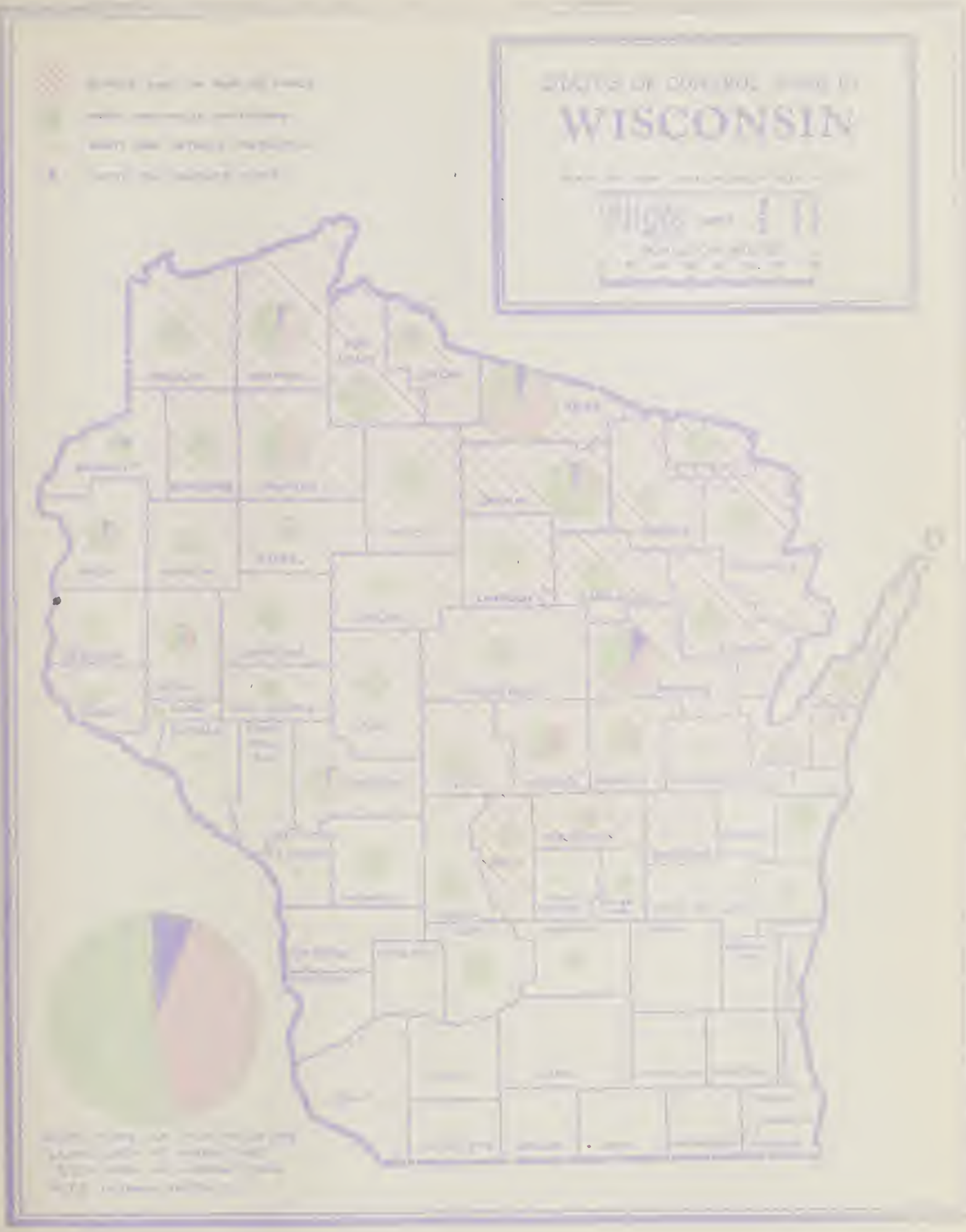
Agency	Acres Treated: White Pine: First Priority	Acres Treated: White Pine: Second Priority	Acres Treated: Miscellaneous Sites	Acres Treated: Total	Man-Days Labor	Man-Days Supervision
State S.C.W.	28,447	11,041	900	39,488	1,018	610
DNRS - S.C.W.	3,050	-	247	3,297	-	59*
Indian S.C.W.	13,487	3,066	-	17,553	57	70.5
T.R.A.	4,357	4,446	-	8,803	-	57
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Estimated.

Table 54. - Summary of White Pine Location and Pre-eradication Survey Costs
Wisconsin, 1935
All Agencies

Agency	Cost of Labor: Wages	Cost of Labor: Transportation	Cost of Labor: Total	Cost of Supervision: Salaries	Cost of Supervision: Subsistence	Cost of Supervision: Transportation	Cost of Supervision: Total	Supplies & Other Expenses	Total Cost
State S.C.W.	1,907.50	194.41	2,101.91	3,469.32	66.50	971.79	4,477.61	51.34	6,630.76
DNRS - S.C.W.	-	-	-	178.08	75.00	45.70	298.78	-	298.78
Indian S.C.W.	180.00	64.64	244.64	1,484.39	-	557.03	2,041.42	80.44	2,366.50
T.R.A.	-	-	-	400.80	150.60	111.58*	661.58	-	661.58
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Includes $18.39 State Funds.


WISCONSIN

[illegible] protection to the [illegible] [illegible] [illegible]

necessary, a "mop-up" the following spring would reduce the live stem index to an average of [illegible] per acre. Systematic checks of many areas worked on for blister eradication showed that there was a substantial reduction in the index of live stems and that from 15 to 100 or more F.I.s. per acre remained. It was observed that the index F.I.s. per acre was reduced to about 1/2 of the original live stem found on the area. It was also noticed that the most successful work was performed on the upland where large bodies were distributed throughout the area. At the present time no definite statement can be made relative to the efficiency of blister eradication work performed after bites become partially or totally defoliated. It is expected that systematic checks of 1935 work, during the spring of 1936, will supply much of this needed information. During 1935 the cost of "late" eradication was somewhat higher than the cost of similar work performed earlier in the season. By prolonging the season the relief workers, especially those workers on F.E.R.A. Project OP-1-122, were employed for a longer period. At the same time through the use of this relief labor it was possible to protect pine stands which otherwise may have become seriously damaged through lack of protection.

During 1935 local control work in Wisconsin was conducted through funds supplied by the following agencies which willingly cooperated in the blister rust control program:

Wisconsin Department of Agriculture and Markets
Wisconsin Conservation Department
Wisconsin Board of Control, through the Washington Lake Project Twy Counties in Wisconsin
United States Department of Agriculture (Regular and Emergency Funds)
National Recovery Administration
Wisconsin Emergency Relief Administration (FERA of 1933)
Works Progress Administration (Project OP-1-122)
Emergency Conservation Work, administered by Wisconsin Conservation Department
Emergency Conservation Work, administered by U. S. Indian Service
Emergency Conservation Work, administered by U. S. Forest Service

Wisconsin Emergency Relief Administration

The 1935 W.E.R.A. blister rust control project in Wisconsin was a continuation of the F.E.R.A. control program begun in 1934; however, many priorities were included in the 1935 program. During the year Pine eradication work was conducted in Barron, Douglas, and Taylor counties. In Douglas and Taylor counties it was possible to obtain many of the same relief workers who had been employed on the blister rust control project during 1934; however, the quality of the work in general was very good. The quality of the work in Barron county was unusually good due, in large part, to the excellent cooperation received from W.E.R.A. and county officials who gave the project a priority rating; thus, the best relief personnel was assigned to blister rust control in that county.

Applications for proposed blister rust control projects already submitted by the District Agent to W.E.R.A. officials in Iron, Ashland, Polk, Portage, and Waukesha counties. These projects remained unapproved, however, because those workers on relief already had been assigned to local projects before the Pines rusted were larger and particularly to begin control work.

In addition to the W.E.R.A. men employed a few unemployed laborers were

Wood. [illegible] funds was paid at the rate of 50 cents hourly for a 30-hour week. Crews not only worked in the area but also transported the T.E.R.A. crews to and from work in their personally-owned cars or trucks, for which they were reimbursed at the rate of five cents per mile. Crews consisted of 13 men each, with 10 men in the line, two "straw-bosses" behind the line, and a relief crew foreman in direct charge of the crew.

The T.E.R.A. project was suitable only to those counties on the county-unit system of relief. In each county the project was submitted to the local W.P.A. Work Secretary. A requisition for T.E.R.A. labor was made, based on estimates from pre-eradication surveys made previously. The committee which approved T.E.R.A. projects in each county consisted of the chairman of the county board, the agricultural agent, the highway commissioner, and the relief director. The county supplied a portion of the labor cost, usually about 25 per cent; therefore, county sanction was needed before the project was considered for approval by District or State W.P.A. officials. When final approval was received the Federal Agent who was in immediate charge of the project began the details of preparation of assignment cards for the workers and arranged specific days for the men to work so that a continuous crew would be available. Since these relief men merely were permitted to work out their budgetary requirements, which often times totalled only 10 or 12 days per month per person, it was necessary to assign almost twice as many men to the project as were needed if each man was permitted to work every working day of the month. A foreman for each crew was chosen by the Agent in charge of the work in the county. Because of added responsibility, each crew foreman received ten cents an hour above the general rate of pay, and in addition he was permitted to work continuously regardless of the number of hours in his budget.

The majority of the T.E.R.A. relief men ranged in age between 25 and 60 years; thus, ordinarily they took the work seriously, did their job as well as they knew how, and they could actually be depended upon to report for work in accord with their assignments. On the other hand, it was unusual if a crew foreman could reason control problems out for himself. All systematic check of areas worked was performed either by the District Agent or by the Agent in immediate charge of work in the county. On the whole, the quality of work compared favorably with the work performed by other relief agencies. As with all projects on which relief men are employed, it is vitally essential that experienced state foremen or Federal agents supervise the work and take full responsibility for its progress and thoroughness.

With the exception of Shawano county, field work terminated on June 30 when T.E.R.A. funds for supervision became exhausted. The Shawano county project continued through July and part of August with funds for supervision supplied by the Wisconsin Department of Agriculture and Markets.

The work accomplished under the T.E.R.A. program is shown in Table 20.

National Recovery Administration

Alien eradication work under the National Recovery Administration began in Chippewa county on May 15 when 25 unemployed men were hired from the city of Chippewa Falls. The request for workers and for the type of men desired was submitted to the Chippewa County Employment Agency. Some 80 workers reported at a central meeting place and the 25 men who appeared best suited for the work were selected. The men were paid for actual working time only; laborers were paid 50 cents an hour and foremen 60 cents an hour. The work consisted of fly

8-hour days. Transportation to and from work was furnished by the workers themselves.

Under this program Ribes eradication work continued in Chippewa county until June 30 when N.R.A. funds for paying workers were terminated. Additional supervision was provided for this project when three foremen appointed on W.P.A. funds were sent there to acquire further experience in Ribes eradication work.

Since adequate supervision was available and the pine areas were comparatively small and readily accessible, the crews consisted of six men each, with five men in the line and a foreman behind the line. The 6-man crew proved itself ideal for the conditions peculiar to the project.

The Ribes eradication work accomplished in Chippewa county during 1936 is summarized in Table 66.

Works Progress Administration: Project OP-1-162.

Ribes eradication work was resumed on a greatly enlarged scale when $242,025.00 of W.P.A. funds were made available from the Emergency Relief Appropriation Act of 1935 to the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture. The money was assigned to the Division of Plant Disease Control for white pine blister rust control in Wisconsin. The bureau carried direct responsibility for both the fiscal and the technical phases of the work and cooperated with the State W.P.A. and National Re-employment Service for labor assignments and with the Treasury Department for accounts and disbursements. The State departments cooperating in blister rust control work were consulted on subjects which pertained to policies and were kept fully advised regarding the progress of the work.

Dr. R. E. Trucker, in charge of the U. S. Division of Plant Disease Control, was appointed the Administrator of the white pine blister rust control project in Wisconsin. Mr. H. W. Putman, Regional Supervisor of the North Central States Region, was appointed the Project Manager. The state supervisor received authority from the Regional Supervisor to administer control work in the state.

A budget was prepared by the Regional Supervisor which subdivided the funds into the following classifications of expenditures: Relief labor, non-relief labor, appointed personnel, travel, and supplies. It was imperative that 90 per cent of the total number of employees hired on W.P.A. funds be taken from the relief rolls. Before a man was eligible for a W.P.A. job he had to be registered with the County Relief Office during May 1935, and the records in that office had to show that he had been on relief for five successive months prior to May, 1935.

The Advice of Allotment, No. P.D.C. 37, was issued to the Regional Supervisor and covered funds appropriated for the Wisconsin Project No. OP-1-162. A Letter of Authority, No. 21-PDC, was issued to the State Supervisor who in turn issued sub-letters of authorization to employees who worked under his direction.

The U. S. Treasury State Disbursing Office in Madison, established primarily to disburse expenditures for the State W.P.A. projects, was authorized by Washington to make disbursement for the white pine blister rust control projects in the states of the North Central Region which includes Wisconsin.

Table 54. - W.P.A. Local Control, Wisconsin, 1935.

County	Acres White Pine Protected	Acres Worked: Crew	Acres Worked: Scout	Acres Worked: Total	Miles Pulled: Crew	Miles Pulled: Scout	Miles Pulled: Total	Man-Days Supervision: Crew	Man-Days Supervision: Scout	Man-Days Supervision: Total	Man-Days Labor: Crew	Man-Days Labor: Scout	Man-Days Labor: Total	Salaries and Subsistence: Labor: WPA	Salaries and Subsistence: Labor: County	Salaries and Subsistence: Labor: Other	Salaries and Subsistence: Labor: Total	Salaries and Subsistence: Supervision: WPA	Salaries and Subsistence: Supervision: State	Salaries and Subsistence: Supervision: Total	Transportation: Labor: WPA	Transportation: Labor: State	Transportation: Labor: Total	Transportation: Supervision: WPA	Transportation: Supervision: State	Transportation: Supervision: Total	Total Costs
Initial Eradication																											
Barron	652	1,101	2,115	3,216	182,492	6,449	188,941	835	14	849	43.5	23.5	67	1,000.16	451.84	471.00	2,412.40	464.56	-	464.56	100.95	-	188.95	214.97	-	214.97	3,396.90
Marathon	495	587	1,346	1,872	177,000	5,034	182,034	554	18	610	22	18	40	1,637.80	256.40	93.75	2,018.95	267.34	-	267.34	58.68	-	68.68	87.80	-	87.80	2,436.74
Shawano	918	659	1,913	2,570	55,846	3,946	59,792	341	27	368	15.5	5.5	21	585.76	195.22	5.75	786.75	73.30	67.94	141.16	5.05	2.80	7.85	9.76	11.00	20.76	956.52
Total	1,165	2,347	5,374	7,658	415,338	15,429	430,767	1,730	59	1,829	81	47	128	3,223.74	903.46	570.50	5,198.10	805.20	67.94	873.14	164.65	2.80	267.45	312.57	11.00	323.57	6,060.14
Second Eradication																											
Shawano	1,583	1,534	3,797	5,331	354,084	9,702	363,786	797	54	851	35.5	6	41.5	1,767.93	501.86	36.25	2,306.04	154.05	104.72	258.65	9.95	8.59	18.54	16.90	13.12	30.02	2,714.69
Total 1st & 2nd Erad.	2,814	3,881	9,171	13,040	769,422	25,131	794,553	2,527	113	2,680	116.5	53	169.5	4,991.67	1,405.32	606.75	7,504.14	959.25	172.66	1,131.91	174.60	11.39	285.99	329.47	24.12	353.59	8,774.83

Table 55. - W.P.A. Local Control, Wisconsin, 1935.

County	Acres White Pine Protected	Acres Worked: Crew	Acres Worked: Scout	Acres Worked: Total	Miles Pulled: Crew	Miles Pulled: Scout	Miles Pulled: Total	Man-Days Labor: Crew	Man-Days Labor: Scout	Man-Days Labor: Total	Man-Days Supervision: Crew	Man-Days Supervision: Scout	Man-Days Supervision: Total	Salaries and Subsistence: Labor: WPA	Salaries and Subsistence: Labor: Other	Salaries and Subsistence: Labor: Total	Salaries and Subsistence: Supervision: WPA	Transportation: Labor: WPA	Transportation: Supervision: WPA	Total Costs
Chippewa	861	860	1,630	2,490	183,780	1,881	185,661	429.5	17.5	447	44.5	3.5	48	1,794.00	129.60	1,924.10	275.00	-	80.00	2,284.10

A large portion of the work carried out found to be ineffective and [illegible] [illegible] [illegible]

[illegible] - [illegible] Local Control, [illegible], 1938

[illegible]	[illegible] [illegible]	[illegible]	[illegible]	[illegible]	Total	[illegible]	[illegible]	Total	[illegible]	Total	[illegible]	[illegible]	Total	Labor	Supervision	Labor	[illegible]	[illegible]	[illegible]	Total	Total Cost
										Initial Eradication											
[illegible]		1,093	4,148	6,964	8,208	1,035,120	15,097	1,150,[illegible]	521	10,227	12,205	20,50	32,6	25,677.80	645.16	865.40	126.92	-	18.00	177.66	26,[illegible]
[illegible]		1,988	8,140	8,909	12,009	642,271	4,960	447,150	169	5,685	53.9	-	52.9	11,049.78	380.30	352.90	77.10	-	15.88	90.47	11,[illegible]
[illegible]	87	259	1,958	1,958	4,580	485,795	1,160	417,950	[illegible]	4,279.5	80	4	84	6,097.85	380.08	181.20	127.08	-	-	127.10	7,[illegible]
[illegible]		147	30	700	930	7,505	10	7,000	11	58	-	1	1	32.40	4.70	-	6.58	-	-	7.58	[illegible]
[illegible]		993	1,175	2,101	3,407	462,400	1,003	345,777	100	4,782	52	7	59	5,881.41	440.30	424.89	100.09	-	-	104.96	7,[illegible]
[illegible]		4,452	4,777	4,772	6,700	1,310,140	4,461	1,314,[illegible]	285	4,771	58	15	73	11,550.10	277.30	152.70	150.58	-	-	152.80	11,[illegible]
[illegible]		319	395	880	1,277	136,429	2,340	140,475	[illegible]	250	11	-	11	1,705.60	70.02	-	58.17	-	-	58.17	1,[illegible]
[illegible]		4,752	5,502	7,180	12,454	570,105	25,857	[illegible]	680	8,888	59	10	67	11,039.70	568.04	-	160.54	-	-	160.78	11,[illegible]
[illegible]		7,886	1,673	10,456	12,008	271,347	3,020	277,[illegible]	104	7,285	58	28.8	86.8	7,406.95	485.30	-	104.34	15.00	-	119.48	7,[illegible]
[illegible]		320	145	996	1,195	29,351	337	29,[illegible]	17	325	2.5	-	2.5	305.35	9.13	-	1.86	-	-	1.86	711.[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										Second Eradication											
[illegible]		75	385	45	387	34,040	32	[illegible]		585	4	-	4	1,195.80	17.12	3.00	4.71	-	-	4.71	1,[illegible]
[illegible]		192	853	700	1,080	35,886	2,215	36,147		195	4	-	4	314.85	71.20	2.90	15.32	-	8.85	16.18	[illegible]
[illegible]		[illegible]	[illegible]	750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	780	[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Includes [illegible] [illegible].

Table [illegible] - [illegible] Local Control, [illegible], 1938

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Total	Labor	Supervision	Labor	Supervision	Total Cost
										Initial Eradication								
[illegible]	4	559	95	2,775	2,090	30,850	[illegible]	[illegible]	1.7	45	7.3	11	18.3	86.00	614.68	-	48.40	859.05
										Second Eradication								
[illegible]	-	340	50	700	850	1,280	100	[illegible]	2	30	5	9	14	40.00	107.17	-	18.10	165.27
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	[illegible]	[illegible]

*Includes one [illegible] [illegible].

Everyone, Conservation work officials, with increasing interest, have begun to recognize blister rust as an example of a highly infectious parasitic fungus that is subject to an complete control as fire and at a reasonable cost. The only thing is increasing acknowledgment of the fact that fire control and pest control must go hand-in-hand. Serious losses may occur when either of the two is omitted. It has been stated that blister rust control costs, initial over a rotation, will have from a dollar per thousand board feet to the average cost of producing white pine lumber; however, without control a pine stand may be completely destroyed and a total loss result.

Spring, instead of paper, was used to mark the zone strip limits. This method of marking strip limits proved entirely satisfactory.

While blister rust control work was governed by the same general regulations in all camps irrespective of the agency in charge of the group, there was a marked difference in the organization for each group; therefore, the C.C.C. camps of each agency will be discussed separately.

Michigan Conservation Department C.C.C.

During 1935 the C.C.C. camps under the direction of the Conservation Department protected against blister rust 28,000 acres of white pine and planted, either by the removal of 2,522,176 ribes bushes from 75,610 acres of land. The work progressed in 19 camps.

For insect and plant disease control purposes the camps were divided into four districts, with a Junior Plant Pathologist responsible for the work in each district. While the insect and plant disease control foreman had direct charge of blister rust control work at the camp under the immediate supervision of the camp superintendent, the Junior Plant Pathologist was responsible to the State supervisor for the systematic inspection of each crew working by the foreman or by the CCC's. The Junior Plant Pathologists were instructed to report any insect pest or plant disease which they considered a potential enemy to forestry.

The total amount of work performed indicates the favorable response to white pine blister rust control work by the camp superintendents regardless of the fact that some of these superintendents, previous to the establishment of camps, had learn little about control of the rust. Excellent cooperation in this control project was received from the Director of the Michigan Conservation Department and from Mr. A. Z. Dawson of the Antigo C.C.C. office.

Several outstanding factors tended to increase or to decrease progress in control work. Deep snow during the spring and summer made work in the swamps very difficult and also retarded the work. The CCC's not only had to wade in water but they had to fight swarms of mosquitoes as well. In another way the heavy rainfall perhaps aided control work for the rains reduced forest fires to a minimum and thus more men were available for blister rust control and other regular projects.

A second factor which tended to decrease production, was which was beyond the control of C.C.C. officials, was that most camps were low in man strength; consequently, smaller sized crews were available. The Conservation Department divided each existing company by lot into two groups: one group was designated for transfer to a proposed camp while the second group was scheduled

to return at the original cost. It was [illegible] the cost was divided into two payments [illegible] the company submitted for transfer [illegible] to Cedar and then forwarded. Thus, the arrangement tended to decentralize [illegible] scheduled to remain at the original cost.

It has been one of the duties of the foreman and junior plant pathologists to disseminate to interested persons information on white pine blister rust and another dangerous plant diseases and harmful insect pests and to recommend to them the proper control measures. In line with this general practice, demonstrations were given at various county fairs and timely news releases were published in local newspapers. As a result of this educational work it appeared that forest owners were becoming increasingly convinced that insect and plant disease prevention and control is necessary, and that such work must go hand-in-hand with fire prevention and control.

Table 58 lists the results of State C.C.W. local control in Wisconsin for 1934.

U. S. Forest Service C.C.W.

Two National Forests are established within the State, the Chequamegon in northwestern Wisconsin, with headquarters in the city of Park Falls, and the Nicolet in northeastern Wisconsin, with headquarters at Rhinelander. These Forests are being expanded as the Forest Service requires additional land.

Not all of the land within the gross boundary of the National Forests is owned by the U. S. Forest Service. Within the gross area of these National Forests there are private, county, and State lands as well.

During 1933 the U. S. Forest Service protected 2,000 acres of white pine and 150 acres of potential white pine planting sites by the removal of 202,130 ribes from 10,150 acres of land. Table 70 lists the amount of ribes eradication work performed on the Chequamegon and Nicolet National Forests for the year 1935.

An E.C.W. Technician placed in direct charge of blister rust control work on U. S. Forest Service land, worked in close contact with the Supervisors of these National Forests. The two Forest Supervisors and the personnel of the Regional Forester's office took a very favorable attitude toward the blister rust control program and cooperated to the fullest extent.

Chequamegon National Forest

The Chequamegon National Forest supports a variety of tree species. Hemlock, spruce, and hardwoods predominate on the clay and loam soils of the Deer Lake, Flambeau, Mineral Lake and Hayward districts, while jack, red and white pines are found in greatest abundance on the sandy loam soils of the Laona and Drummond districts. Attempts at white pine reproduction occurs in pure stands on the Drummond District and in the southern portion of the Laona District.

Although white pine was the predominating tree species on a large portion of the area in the original forest, a destructive logging practice of lumber companies and reputed forest fires which followed left the land practically devoid of white pine seed trees. As a result of this carelessness much of the area which formerly grew white pine must be planted.

Table 37. - State ECP Local Control, Standards, 1976.

County Number and Name	Acres Evaluated Fish. Value Lines, Tier	Acres Surveyed Lines	Acres	Total	Miles Fish. Lines	Miles	[illegible]	Acreage Lost Lines	Acres	Total	Man-Days Expenditure Lines	Acres	Total	Cost Lines and Equipment Lines	Acres	[illegible]	Total	Transportation Lines	Acres	[illegible]	Total	Materials Lines	Total Cost
											Initial Eradication												
002 Pickwell	600	490	1,051	1,150	10,197	2,796	[illegible]	201	180	381	30	15	45	1,116.00	300.97		300.97	107.42					1,589.36
005 Lakeview Lake	1,805	1,081	1,218	2,287	465,100	7,750	[illegible]	1,372	195.8	2,066.8	25	10	35	3,078.15	438.00		438.00	227.20	77.10		78.10		3,966.15
006 Riverside	130	416	-	416	12,704	-	[illegible]	79	-	79	2	-	2	110.00	16.14		16.14	4.05					132.47
007 Smith Lake	8,845	9,844	6,191	16,419	719,898	2,459	[illegible]	1,764	55	1,799	16.65	6.65	16.5	3,475.50	96.45		96.45	179.09					3,671.77
008 Crystal Lake	4,040	1,000	5,240	10,780	805,480	5,891	[illegible]	1,101.5	277	1,378.5	30	20	50	2,560.70	177.40		177.40	110.37	141.19		248.19		2,886.23
009 Blue Lake	1,680	717	1,858	5,116	454,911	100	[illegible]	1,407.5	-	1,407.5	50	85	80	3,138.35	248.45		248.45	180.08	7.10		7.10		3,775.88
010 Below Spring	888	1,868	444	2,040	408,804	1,099	[illegible]	1,492.5	81	1,744.5	47.5	9.5	57	3,613.75	405.20		405.20	248.02					3,228.17
011 Bernice	1,877	1,094	1,442	4,018	672,238	2,480	[illegible]	1,622.5	258.5	1,881	69	10	79	3,845.50	610.44		317.44	107.34	11.90		11.90		3,819.18
012 Globe	149	1,412	718	2,157	310,050	2,518	[illegible]	1,119.5	46	1,165.5	18.5	1	19.5	2,419.50	455.42		455.42	220.21	17.42		17.42		2,112.09
013 Tomahawk	492	1,000	365	1,404	140,080	20	[illegible]	1,187	-	1,187	50	7	30	2,500.00	885.35		305.35	119.10	94.30		94.30		2,560.75
014 Clear Point	46	691	237	1,080	1,710	142,408	1,298	[illegible]	1,291	86	1,387	46	21.5	77.5	1,000.50	450.05	45.50	157.14	86.70		86.70		1,484.75
015 Cow River		191	290	477	1,098	714,420	632	[illegible]	7,219	48	1,548	44	7	52	1,258.00	474.13		274.13	45.29	45.50	45.80		1,599.42
016 Dunham		350	420	1,018	3,480	505,890	15	[illegible]	1,119.5	10	1,129.5	14	40.5	15.5	1,701.50	551.57		551.57	155.95				2,575.52
017 Elder		246	701	96	797	125,272	-	[illegible]	1,088	1	1,090	50.5	1.5	52	2,088.00	104.40		104.40	211.01	2.00		2.00	2,313.79
018 Deer Lake		6,708	1,494	3,441	11,643	316,740	1,607	[illegible]	1,700.5	150.5	2,150	108	18	126	4,187.00	627.13		627.13	162.68	77.05	77.00	8.04	4,180.25
019 Kilpatrick		49	209	30	288	34,787	117	[illegible]	159.5	6	165.5	6.5	8	7	126.28		28.40	32.40	8.43	7.00	7.00		168.02
020 Elkhorn		100	651	1,080	1,892	824,108	5,000	[illegible]	404	50.5	454.5	17.5	18	35.5	1,116.75	180.51		180.51	100.75	38.48	38.48		1,480.23
											Annual Eradication												
021 Johnson Lake		1,956	-	3,281	3,281	-	-	[illegible]	-	44	44	-	19	19	19.00	106.40		106.40	47.45				236.85
022 Drift Lake		177	448	490	498	7,400	300	[illegible]	17	5	22	2	1	3	101.00	2.80		2.80					103.80
023 Globe		96	196	116	294	68,408	527	[illegible]	294	2	297	15	-	15	524.50	22.74		22.74	20.46	5.10	5.10		492.80
024 Gray Point		746	-	958	958	-	-	[illegible]	-	-	-	-	6	6		13.75		13.75		.75	.75		13.50
025 Bee Lake		193	881	208	300	18,695	31	[illegible]	350	1	351	50	1	49	686.50	140.40		140.40	97.72				1,024.72
026 Globe		40	48	94	142	9,400	-	[illegible]	23	-	38	3.5	.5	4	14.00	10.80		10.80	9.40	1.45	1.45		35.15
027 Star Lake		104	40	298	338	200	-	[illegible]	11.5	18.5	30	.5	.5	1	79.50	5.32		5.32	5.72	.75	.75		47.32
John Lenore		4	-	197	197	-	71	[illegible]	-	4	4	-	1	1	2.70	2.25		2.25		1.27	1.27		6.22
Total																							
Grand Total																							

*Includes 1 other signer.
*Includes 7 other signer.
*$1.80 per [illegible] member.

A summary of the control work conducted will be discussed separately under each reservation.

Bad River Indian Reservation

The gross area of the Bad River Indian Reservation comprises four complete and four partial townships, all of which lie in the northern portion of Ashland and Iron counties. The land within the gross area of the reservation belongs, in a large part, to various Chippewa Indians, and a sizeable portion of the area belongs to white citizens.

The topography consists of a plateau which slopes gradually toward the northeast to Lake Superior. This plateau is cut by numerous deep ravines except in the extreme northern part where a network of swamps extends to the lake. The vegetative growth in this swamp area can be inspected only during the winter months when the ground surface and the water are frozen. The Bad River and the White River with their accompanying ravines constitute the principal drainage system. These streams flow in a general northerly direction, and they are relatively short and rapid until they reach the swamp area near Lake Superior.

The soil of the reservation is a Superior clay loam, a peculiar mixture of soil which is extremely hard when dry.

Some seventy years ago the area which now comprises the Bad River Indian Reservation supported extensive white pine forests, but due to destructive logging practices during the early logging days and to the fires which followed, no mature stands of this conifer remain. Almost all of the reproduction is small, however, chiefly scrub aspen, white birch and pin cherry. Several tracts of white and red pine reproduction, which range from 15 to 25 feet high, were found growing under an overstory of aspen which [illegible] [illegible].

The pre-eradication survey of the reservation disclosed 3,577 acres of first priority white pine reproduction.

The Ribes species found, in descending order of their occurrence are: Ribes cynosbati, R. hirtellum, R. triste, R. glandulosum, R. lacustre, and R. americanum.

No blister rust was discovered on white pine, but several infections were found on Ribes nigrum bushes near the village of Odanah. These Ribes nigrum bushes were removed and burned.

Ribes eradication work began on May 17 and it terminated on September 30. During the summer approximately one-half of all the first priority pine on the reservation was protected. A total of 1,827 acres of pine were protected by the removal of 1,152,561 Ribes bushes, from 4,596 acres of land. The local unit of the I.D.-C.C. supplied the labor which varied during the season from 80 to 100 enrollees.

Not all of the pine on the reservation belongs to the Indians. Some of it belongs to white citizens or townships. It was found inadvisable to work one reservation without covering the closely associated lands, so an arrangement was made with the Indian Service for the U. S. Bureau of Entomology and Plant Quarantine to furnish the supervision and the I.D.-C.C. to supply the labor.

[illegible]

[illegible]

[illegible]

Table [illegible] - [illegible] Forest Service Insect Control, Wisconsin, 1965.

Forest	Acres Protected: Plant. sites	Acres Protected: Bite Tree	Acres Scouted: Crew	Acres Scouted: Scout	Acres Scouted: Total	Trees Felled: Crew	Trees Felled: Scout	Trees Felled: Total	Non-Pay Labor: Crew	Non-Pay Labor: Scout	Non-Pay Labor: Total	Non-Pay Supervision: Crew	Non-Pay Supervision: Scout	Non-Pay Supervision: Total	Costs Incurred: Interior and Maintenance: Labor	Costs Incurred: Interior and Maintenance: Supervision	Costs Incurred: Transportation: Labor	Costs Incurred: Transportation: Supervision	Costs Incurred: Materials	Costs Incurred: Total
											Initial Eradication									
Eleroth	[illegible]	[illegible]	1,[illegible]	[illegible]	[illegible]	145,340	15,100	160,[illegible]	1,[illegible]	[illegible]	1,[illegible]	14.70	15.5	30.20	3,101.50	880.09	508.50	-	1.50	3,[illegible]
Ohanapecosh	-	2,015	1,[illegible]	3,[illegible]	4,[illegible]	389,[illegible]	1,[illegible]	392,[illegible]	170	140	3,[illegible]	80.85	34	114.85	3,488.00	1,050.09	221.15*	26.80	10.30	4,[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Includes wages of Bend driver (140 man-days) $179.85.

Table [illegible] - [illegible] Insect Control, Wisconsin, 1965.

Designation	Acres Protected: Plant. sites	Acres Protected: Bite Tree	Acres Scouted: Crew	Acres Scouted: Scout	Acres Scouted: Total	Trees Felled: Crew	Trees Felled: Scout	Trees Felled: Total	Non-Pay Labor: Crew	Non-Pay Labor: Scout	Non-Pay Labor: Total	Non-Pay Supervision: Crew	Non-Pay Supervision: Scout	Non-Pay Supervision: Total	Costs: Interior and Maintenance: Labor 1965	Costs: Interior and Maintenance: Supervision 1965	Costs: Interior and Maintenance: [illegible]	Costs: Interior and Maintenance: Total	Costs: Transportation: Labor 1965	Costs: Transportation: Supervision 1965	Costs: Materials 1965	Costs: Total 1965
											Initial Eradication											
Red River	-	1,[illegible]	[illegible]	30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12	[illegible]	[illegible]	30	[illegible]	12,[illegible].90	702.80	221.00	1,[illegible]	962.08	[illegible].60	-	[illegible]
Nicolet	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	87	30	117	10,[illegible].00	805.00	-	[illegible]	176.40	-	93.00	17,[illegible]
Total	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Consequently, the Indian [illegible] of the Bureau representing the Tribal Chief, [illegible] also in the employment of many local Indians.

It was estimated by the U.S. Indian Service, largely from the [illegible] soil conservation programs among, that 50,000 acres of first and second priority value plus parts of the remainder. This plan was modified [illegible] the following figures:

Future white pine (first and second priority)	31,434 acres
Long white pine (first priority)	[illegible] acres
Long white pine (second priority)	18,120 acres
First and second priority white pine	[illegible] acres
Hardwood plus (evidence)	30,000 acres

White pine thinnings and the revenue to the operation [illegible] August 15, 1959, the [illegible] Tribal Council [illegible] of Indians work from Infirmary. [illegible] were sent at the [illegible] Sandy 1960 [illegible] operations [illegible] Tribal Council [illegible] within a mile radius of the Village of Tamarack.

During late [illegible] Infirmary were hired generally distributed [illegible] the Village, but the [illegible] were in the [illegible] especially in the [illegible] portion of the Reservation. The [illegible] Area in the [illegible] Tribal Council [illegible] Tribal Lumbering were [illegible] in Sections 21 and 28 of Township 47 North, Range 11 West, which would indicate that [illegible] operations [illegible] the 21 Infirmary [illegible] near Tamarack.

Unlike in the two previous years, the 1957 Tribal [illegible] was performed entirely with I.C.C.C. funds. A white [illegible] was [illegible] and planted in [illegible] Tribal [illegible] performed [illegible] by the Indian experiment in tribal [illegible] work.

During 1957 there were 5,877 acres of first priority white pine [illegible] and 1,180 acres of Tribal [illegible] by the removal of 7,680,000 [illegible] trees [illegible] 7,180 acres of [illegible]. Field work began on May 15 and terminated on September 15. The [illegible] wanted, for the [illegible] year, [illegible] Tribal [illegible] and a [illegible] Tribal [illegible], a [illegible] possibility was used and greater accuracy was obtained in [illegible] by the use of a [illegible].

All workers and [illegible] were given specific [illegible] work assembly and in the proper root-removal of Tribal [illegible]. A [illegible] of [illegible] and an abundance of [illegible] resulted [illegible] the work during the season.

[illegible] official [illegible] completed [illegible] that the [illegible] performed accurate work, so accurate that most of the [illegible] trees stood like "[illegible] 12 [illegible] per cord."

[illegible] was [illegible] only in [illegible] white pine stands [illegible] of Indian Forests could be [illegible] until the Tribal [illegible] larger. It has been [illegible] that one will [illegible] Tribal [illegible].

[illegible]

[illegible]

[illegible]

In Table VI, [illegible] the [illegible] of [illegible] plus [illegible] and [illegible] found in the [illegible] [illegible] [illegible] 1959.

Table VI [illegible] the composite [illegible] [illegible] in Minnesota during 1957 with in Table VI the [illegible] results [illegible] [illegible].

Table VI [illegible] the [illegible] control results by [illegible] [illegible] [illegible]. It will be [illegible] that [illegible] end of the 1957 [illegible] [illegible] [illegible] [illegible].

[illegible] Check of Fiber Treatment [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Table [illegible] - Summary All Local Control, Wisconsin, 1935.

Program	Acres Protected: Plant. Sites	Acres Protected: White Pine	Acres Worked: Crew	Acres Worked: Scout	Acres Worked: Total	Ribes Pulled: Crew	Ribes Pulled: Scout (Incl. Cult.)	Ribes Pulled: Total
Initial Eradication								
CCC		3,548	6,975	863	7,838	5,786,595	6,371	5,792,966
NYA		361	860	1,630	2,490	183,758	1,821	185,579
State Prison	2	639	95	1,776	1,871	33,860	251	34,111
State T.C.W.	36	21,924	25,254	41,804	67,058	3,860,573	35,686	3,896,259
USFS-CCC	235	3,909	2,806	7,600	10,406	534,783	17,347	552,130
WPA		1,345	2,285	5,674	7,959	397,336	13,429	410,765
WPA	35	14,260	27,752	48,047	75,799	5,643,327	74,024	5,716,351
Total	308	45,986	66,027	107,394	173,421	16,439,235	148,929	16,588,164
Second Eradication								
State Prison		268	60	770	830	2,960	102	3,062
State CCC		2,629	989	7,783	8,772	99,075	800	99,875
WPA		1,269	1,634	3,797	5,431	331,034	9,302	340,336
WPA		253	620	770	1,390	80,890	3,251	84,141
Total		4,419	3,303	13,100	16,403	513,979	13,455	527,414
Total 1st & 2nd Erad.	308	50,405	69,330	120,494	189,824	16,953,214	162,384	17,120,598

Program	Man-Days Labor: Crew	Man-Days Labor: Scout	Man-Days Labor: Total	Man-Days Supervision: Crew	Man-Days Supervision: Scout	Man-Days Supervision: Total	Costs: Salaries and Subsistence: Labor	Costs: Salaries and Subsistence: Supervision	Costs: Transportation: Labor	Costs: Transportation: Supervision	Costs: Materials	Costs: Total Cost
Initial Eradication												
CCC	182	200	12,382	287.5	66	353.5	30,674.90	1,918.53	956.42	104.60	93.00	33,747.45
NYA	479.5	17.5	517	44.5	5.5	50	1,924.10	375.00	-	80.00	-	2,359.10
State Prison	46.5	1.5	48	9.5	19	28.5	96.00	214.83	-	28.40	-	339.23
State T.C.W.	399	1,310	23,669	973.75	199.75	1,173.5	35,523.75	6,291.44	2,813.53	615.70	5.04	45,249.46
USFS-CCC	604	648	4,452	95.6	49.5	145.1	6,677.50	1,256.18	579.40	96.30	45.00	8,654.38
WPA	438	137	1,575	87	41	128	5,826.10	873.06	257.45	323.53	-	5,580.14
WPA	33,533.5	1,727	34,030.5	408.65	79.75	488.4	89,533.97	3,025.70	1,750.10	949.94	-	95,257.72
Total	34,682.5	4,091	78,373.5	1,906.5	480.5	2,367	179,556.32	13,954.74	6,358.90	2,179.47	143.04	198,201.[illegible]
Second Eradication												
State Prison	17	3	20	5	9	14	40.00	107.17	-	18.10	-	165.27
State CCC	914.5	82.5	1,097	46	24	70	1,645.50	420.05	150.33	7.55	-	2,223.43
WPA	777	54	831	35.5	6	41.5	2,396.04	269.68	18.54	30.02	-	2,714.28
WPA	755	31	796	8	-	8	2,090.69	93.30	10.70	20.89	-	2,215.58
Total	2,463.5	170.5	2,744	94.5	39	133.5	6,172.23	890.20	179.57	76.56	-	7,318.56
Total 1st & 2nd Erad.	37,146	4,261.5	79,417.5	2,001	499.5	2,500.5	175,728.55	14,844.94	6,538.47	2,255.03	143.04	198,506.03

Table II. - Summary of Costs of Sites Rehabilitated Each, Biscayne, 1971 to 1976; Indirect.

Year	Number Worked	Man Worked Second	Total	Sites Rehab.	Cost	Per Man Cost	Per Man Time	Cost per Rehab. Site
1970	220	6	240	24,106	600.00	2.57	109.1	2.08
1971	75	0	75	5,942	156.63	1.07	77.0	2.57
1972	10,995	0	10,995	777,172	7,709.76	.65	70.6	.99
1973	5,225	2	5,227	457,095	5,150.64	.43	87.4	.70
1974	1,770	0	1,770	200,285	1,667.31	.93	111.6	.77
1975	1,637	10	1,647	204,643	2,871.50	.80	124.0	1.74
1976								
1977								
1978	15	190	205	51,570	760.00	3.73	251.4	3.70
1979	320	50	370	42,550	1,118.21	1.25	115.0	3.02
1980	547	0	547	79,862	1,045.25	1.93	146.0	1.91
1981	180	20	180	16,784	771.08	4.24	109.1	4.29
1982	401	0	401	164,428	969.15	1.97	410.0	.59
1983	7,505	300	7,807	112,254	1,919.38	.60	15.3	.24
1984	10,457	0	10,457	1,590,727	6,079.11	.58	152.0	.38
1985	63,660	0	63,660	4,021,243	46,690.14	.73	63.2	1.16
1986	186,905	17,125	242,830	17,977,308	176,560.00	1.72	98.0	1.77
1987	178,221	13,125	191,346	17,190,000	190,805.00	1.05	90.8	1.24
Total	410,142	66,366	444,212	56,255,331	440,102.25	1.00	36.7	1.31

Table 74. - Acres of White Pine and Planting Sites Protected, Wisconsin, 1938.
Classified According to Counties, Agencies and Ownerships

County	Agency	Acres Planting Sites	Acres White Pine	Ownership Classes: Private	County	State	Forest Service	Indian Service	Total
				Initial Eradication					
Adams	WECW		747	747					747
Ashland	IECW		1,517	1,517					1,517
Barron	WERA		532	532					532
Barron	WPA		2,070	2,070					2,070
Bayfield	USFS-ECW		2,983				2,983		2,983
Bayfield	WECW		6,074	3,804	2,270				6,074
Burnett	WECW		120		120				120
Chippewa	NRA		361	361					361
Clark	WECW		378	378					378
Douglas	WECW		323	207	116				323
Dunn	WPA		1,968	1,968					1,968
Eau Claire	WECW		74	74					74
Eau Claire	WPA	33	368	401					401
Florence	WECW		140	140					140
Forest	USFS-ECW	35	344				379		379
Green Lake	WPA		147	147					147
Iron	WECW		234	30		204			234
Jackson	WECW		1,503	1,293	210				1,503
Juneau	WECW		73		73				73
Langlade	WECW		249	114	135				249
Lincoln	WECW		587	587					587
Marathon	WERA		495	495					495
Marathon	WPA		991	991					991
Marinette	WECW		520	419	101				520
Oconto	USFS-ECW	200	407				407		407
Oconto	IECW		424					424	424
Oneida	State Prison	2	673	119	101	452			672
Oneida	USFS-ECW		86				86		86
Oneida	WECW		1,669	1,409	210	259			1,669
Portage	WPA		1,485	1,485					1,485
Sawyer	USFS-ECW		30				30		30
Sawyer	WECW		[illegible]		[illegible]				[illegible]
Shawano	IECW		[illegible]						[illegible]
Shawano	WPA		341	341					341
Vilas	WECW		3,103	2,251	1,258	1,471			3,103
Washburn	WECW		187	187					187
Waupaca	WPA		1,751	1,750	1				1,751
Waushara	WPA		2,603	2,533					2,533
Winnebago	WPA		200	200					200
Wood	WECW	36	693	331	326				757
Total Initial Eradi.		306	45,986	19,947	5,024	4,386	4,144	2,331	35,832
				Second Eradication					
Bayfield	WECW		177	177					177
Clark	WECW		56	56					56
Dunn	WPA		70	70					70
Jackson	WECW		1,474	1,318	156				1,474
Langlade	WECW		10	10					10
Lincoln	WECW		172	166	4				170
Monroe	WECW		84	84					84
Oneida	State Prison		248		140	108			248
Oneida	WECW		202		157	45			202
Shawano	WERA		1,236	1,236					1,236
Shawano	WPA		183	183					183
Washburn	WECW		6	6					6
Wood	WECW		248		248				248
Total Second Eradi.			4,419	3,341	927	151			4,419

control area type of 10 acres is reworked. Consequently, a comparatively small percentage of Ribes eradication work [illegible] was applied to Wisconsin. Nearly half averaged above 25 f.l.r. per acre after the first working, and a large portion of it was found to contain between 10 and 25 f.l.r. per acre. As a result, it was seldom necessary to rework.

Analysis of Ribes Eradication by Eradication Types, Wisconsin, 1937.

Ribes eradication work was performed under three general types of conditions, (1) Lowland Crew, (2) Upland Crew, (3) Track.

"Lowland Crew" refers to work in Ribes swamp areas (Ribes type A) where usually Ribes bushes are numerous, small, of several species, and where brush conditions are heavy. Usually water is on the surface of the ground. It is necessary to have to work close together, 3 feet or less between men. The going is slow, not only because Ribes bushes are numerous, but also because brush, water and pitfalls make travelling slow and difficult.

"Upland Crew" refers to work in all upland areas requiring crew work (Ribes types C, parts of D and E.) Under these conditions Ribes concentrations vary from light to heavy, and is usually patchy. The bushes are usually large, and consist principally of *Ribes cynosbati* with *R. americanum* and *R. [illegible]* found in certain sections. Distance between crew members varies from 6 to 20 feet depending on Ribes abundance and brush density.

"Track" refers to work in areas where Ribes bushes are scarce or absent, (Ribes Types I, J, parts of D and E.) This work may be done by one man or a crew of two to five. The men, in charge of one man, are spaced about 50 to an indefinite distance apart, depending on brush and Ribes. The principal aim of the [illegible] is to find pockets or other small spots where Ribes grow and eradicate such bushes.

In Table 32 there is shown an analysis of Ribes eradication work in Wisconsin by Eradication types, and agencies. Attention is called to the following points.

The largest number of Ribes pulled per acre, the most pulled per man-day, and the largest number of man days per acre was found on Indian Service lands. In spite of this fact, the "E" factor was also the highest.

Judged on the basis of the "E" factor, the best work was done at the [illegible] State Prison Camp.

The per cent of acreage worked as lowland crew varied from 0.12% under [illegible] to 9.11% under the WPA program, and averaged 3.90% for the State.

Although only 3.90% of the total worked area was lowland area, it supported 51.70% of all Ribes bushes, and 22.60% of man days of labor was expended on it. This indicates that lowland area is the most expensive type from which to eradicate Ribes.

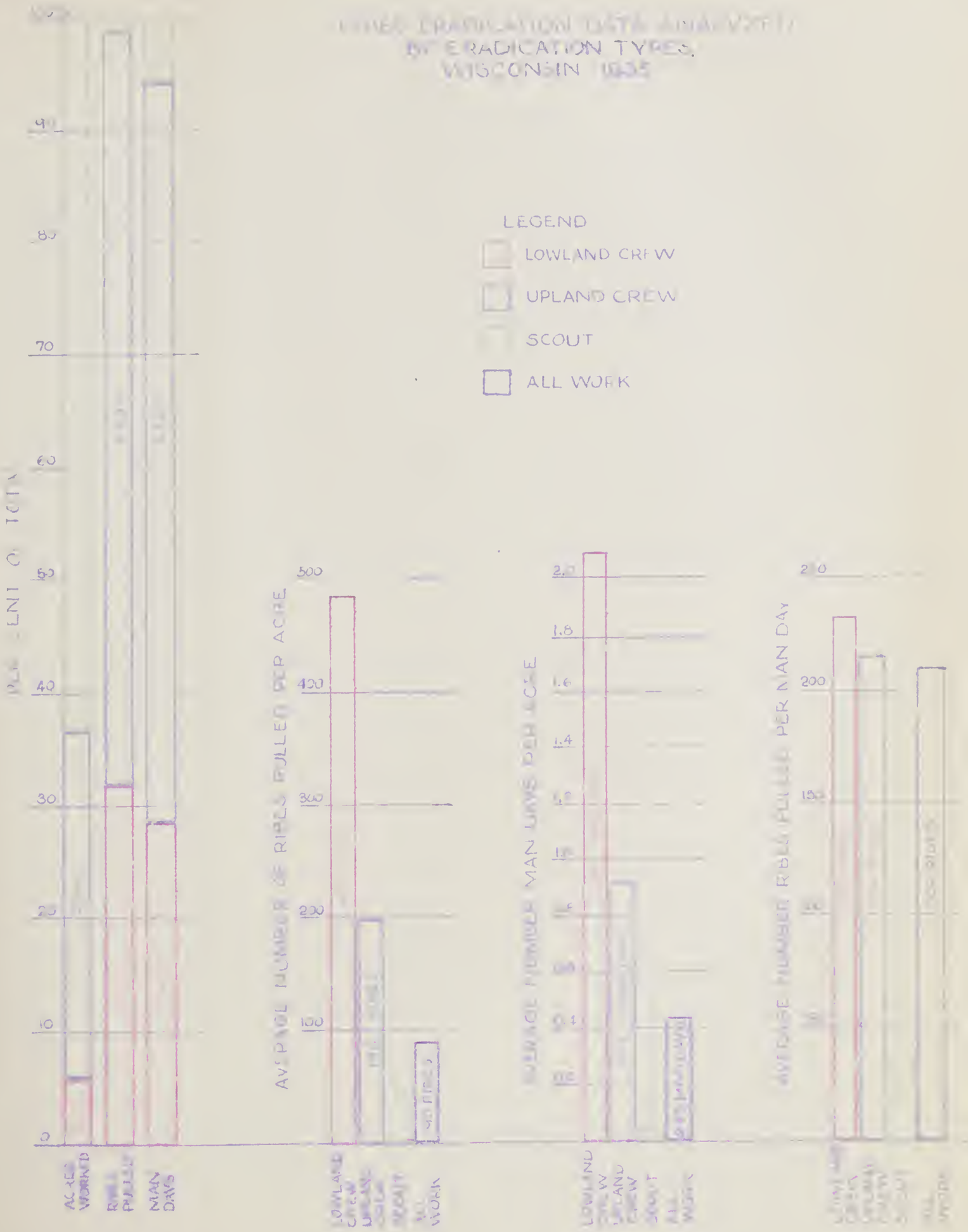
This same fact is demonstrated in the averages per acre. In lowland crew work an average of 205 bushes were pulled per acre at an expenditure of 2.09 man days per acre. In upland crew work these averages were 198 bushes and 0.38 man days - less than half the bushes or man days in lowland crew work.

TABLE 78. - Analysis of Sibes Eradication by Specialized [illegible] [illegible] 12, 1956.
(Employees hired 1st and 2nd [illegible])

Eradication Type	Number: Acres Worked	Number: Sibes Pulled	Number: Total Man-Days Labor & Super.	Percent of Total: Acres Worked	Percent of Total: Sibes Pulled	Percent of Total: Total Man-Days	[illegible]	Ave. No. Sibes Pulled per [illegible] Man-Days	Ave. No. Sibes Pulled per Man-Day	"f" Factor
					F.F.A.					
Lowland Crew	2,386	1,716,614	7,604	5.14	28.57	21.75	[illegible]	1.44	225	0.37
Upland Crew	24,495	4,011,608	27,985	81.82	69.10	79.67	[illegible]	1.00	165	0.60
Scout	48,517	77,275	1,576	43.64	1.33	4.50	[illegible]	0.04	49	0.25
Total	77,198	5,805,492	35,165	100.00	100.00	100.00	[illegible]	1.45	164	0.54
					Mt. Houghton Black Stripe Comp.					
Lowland Crew	129	95,148	67	4.58	89.13	60.36	[illegible]	0.86	425	0.34
Upland Crew	33	3,682	11	1.82	3.42	9.91	[illegible]	0.35	336	0.31
Scout	2,540	308	33	93.60	0.96	29.73	[illegible]	0.01	11	-
Total	2,701	97,198	111	100.00	100.00	100.00	[illegible]	0.04	437	0.15
					W.C.W.A.					
Lowland Crew	9,198	2,882,392	11,416	9.81	69.23	64.57	[illegible]	1.25	252	1.14
Upland Crew	21,084	1,275,285	14,972	27.81	41.87	33.12	[illegible]	0.83	121	0.69
Scout	45,867	36,497	1,616	60.38	0.91	2.31	[illegible]	0.05	23	-
Total	75,810	4,094,174	28,003	100.00	100.00	100.00	[illegible]	0.54	154	0.44
					F.S.-S.C.A.					
Lowland Crew	984	195,140	1,169	8.61	33.34	18.83	[illegible]	1.00	167	1.10
Upland Crew	2,282	352,543	9,930	81.36	60.22	77.40	[illegible]	1.30	184	0.70
Scout	7,600	17,347	396	72.04	2.96	3.77	[illegible]	0.09	44	0.66
Total	10,866	585,030	11,495	100.00	100.00	100.00	[illegible]	0.53	51	[illegible]
					Indian Service S.C.A.					
Lowland Crew	876	506,687	2,187	7.37	18.86	17.02	[illegible]	2.75	410	0.52
Upland Crew	6,397	1,880,009	10,358	21.82	56.44	80.56	[illegible]	1.60	475	0.87
Scout	863	6,271	210	11.01	0.11	1.62	[illegible]	0.27	30	1.25
Total	7,836	5,792,967	12,755	100.00	100.00	100.00	[illegible]	1.62	455	0.58
					N.N.A.					
Lowland Crew	218	50,552	148	8.11	28.55	16.10	[illegible]	0.73	400	0.45
Upland Crew	658	123,360	396	30.43	69.47	59.84	[illegible]	0.60	312	0.44
Scout	1,630	1,821	23	55.46	0.98	4.06	[illegible]	0.01	79	-
Total	2,490	185,579	567	100.00	100.00	100.00	[illegible]	0.23	327	0.27
					S.E.S.A.					
Lowland Crew	581	237,531	580	4.43	31.62	24.26	[illegible]	0.98	410	0.50
Upland Crew	3,328	490,841	1,769	34.85	65.38	56.44	[illegible]	0.55	277	0.44
Scout	9,471	22,731	338	70.72	3.02	19.31	[illegible]	0.03	36	-
Total	13,390	751,103	2,677	100.00	100.00	100.00	[illegible]	0.19	282	0.35
					All Agencies					
Lowland Crew	11,202	3,436,990	23,451	8.90	21.75	28.40	[illegible]	2.09	282	0.79
Upland Crew	58,108	11,528,452	53,724	50.65	67.30	65.05	[illegible]	0.92	214	0.50
Scout	120,494	152,276	4,762	53.48	0.95	5.81	[illegible]	0.04	32	-
Total	189,804	17,120,598	81,917	100.00	100.00	100.00	[illegible]	0.45	209	0.45

"f" factor is the number of man-days required per acre if Sibes had been present at a rate of 100 per acre.

The formula developed by Dr. S. S. Fracker is $T = \frac{10 M}{\sqrt{r}}$ - In this formula the [illegible] per acre; T= Sibes Inches per acre, and F is explained above. The T. Factor values in this table are based on "Sibes Eradication Progress Alignment Chart" prepared by Dr. Fracker, January 25, 1955.


LEGEND
LOWLAND CREW
UPLAND CREW
SCOUT
ALL WORK
ACRES WORKED
RIBES PULLED
MAN DAYS
AVERAGE NUMBER OF RIBES PULLED PER ACRE
AVERAGE NUMBER MAN HOURS PER ACRE
AVERAGE NUMBER RIBES PULLED PER MAN DAY
LOWLAND CREW
UPLAND CREW
SCOUT
ALL WORK

in forest soil, seedlings per acre and pulled at a cost of [illegible] per acre.

In the accompanying graph these relationships are brought out.

Nursery Sanitation

White pine is one of the principal tree species used in reforestation and afforestation work in Wisconsin. For this reason the distribution of disease-free white pine planting stock from producer to consumer is a paramount prerequisite in controlling the spread of blister rust. It is probable for white pines within a nursery to become infected with this disease unless the environs of the nursery are free of all Ribes plants; therefore, a nursery sanitation zone is established. This sanitation zone consists of a 1500-foot Ribes-free area, instead of the 900-foot area used in protecting stands, and the removal of the European black currant, Ribes nigrum L., for a distance of one mile from the nursery.

Interstate movement of white pines is governed by Federal Quarantine No. 63 of the U. S. Department of Agriculture through the Bureau of Entomology and Plant Quarantine. This regulation permits five-leafed pines to be moved interstate from an infected state only when a federal pine-shipping permit is attached to the outside of the parcel. When shipment is made to a state which has established control areas, a special state permit, secured from the proper official of the state of destination, must be attached to the parcel. A valid state inspection tag, issued by the state from which the shipment is made, must also be affixed.

To secure a federal pine-shipping permit the nursery must have under the given [illegible] sanitation zone conditions. When a nurseryman applies for a pine-shipping permit a federal Plant Quarantine official checks the sanitation zone for Ribes bushes. If the zone is found in a satisfactory condition, a permit is granted for those pines grown that year after the zone is approved. The Sanitation Zone must be reworked and checked each year since a new permit is required each year.

Under Federal Quarantine No. 63 Christmas trees and other parts of five-leafed pines without roots may be shipped interstate without restrictions, providing they are not visibly infected with white pine blister rust.

As far as field work permits, the Wisconsin Department of Agriculture and Markets through the State Entomologist, and the Wisconsin Blister Rust Control organization will cooperate with any nurseryman in the State who wish to establish and maintain sanitation zones, providing that personnel and labor facilities will be furnished by each nursery company which desires this protection.

During [illegible] nursery sanitation work was accomplished in six nurseries, one private, one county, two state and two federal. Table [illegible] summarizes the nursery sanitation work performed during [illegible]. Table [illegible] lists all of the work conducted in Wisconsin since [illegible]. The location of each nursery and the approximate number of white pines grown in each is as follows:

Table 76. - Summary of Nursery Sanitation, Wisconsin, 1935.

Name of Nursery	Ownership	Acres Protected in Nursery	Acres Worked			Ribes Pulled			Man-days Labor			Man-days Supervision			Working	Costs: Salaries and Subsistence: Labor			Salaries and Subsistence: Supervision	Transportation: Labor	Transportation: Supervision	Materials	Total Cost
			Crew	Scout	Total	Crew	Scout	Total	Crew	Scout	Total	Crew	Scout	Total		ECW	NRA	Total	ECW	ECW	ECW	ECW	
U.S. Forest Service Emergency Conservation Work Program																							
Butternut	U.S.F.S.	30	380	-	380	15,570	116	15,686	[illegible]	22	695	59	9	68	1st*	1,042.50	-	1,042.50	475.14	59.60	21.35	-	1,599.59
Rhinelander	U.S.F.S.	35	280	180	460	827	-	827	[illegible]	16	214	42	1	43	5th	297.00	62.10	359.10	310.68	69.85	-	14.00	753.63
Total		65	660	180	840	16,397	116	16,513	871	38	909	101	10	111		1,339.50	62.10	1,401.60	785.82	129.45	21.35	14.00	[illegible]
Wisconsin Emergency Conservation Work Program																							
Central State	State	1	272	-	272	179	-	179	199	-	199	11	-	11	4th	298.00	-	298.00	59.18	48.58	-	-	405.76
Nepco	Private	2	98	-	98	13	-	13	119	-	119	6	-	6	5th	178.00	-	178.00	32.28	29.82	-	-	240.10
Iron County	County	1	204	37	241	144,259	121	144,380	[illegible].5	.5	552	24	-	24	1st*	828.00	-	828.00	153.84	12.32	.40	-	994.56
Trout Lake	State	16	269	-	269	5,528	-	5,528	254	-	254	9	-	9	4th	381.00	-	381.00	46.71	12.60	9.45	-	449.76
Total		20	843	37	880	149,979	121	150,100	1,123.5	.5	1,124	50	-	50		1,685.00	-	1,685.00	292.01	103.32	9.85	-	2,090.18
Total All Nurseries		85	1,503	217	1,720	166,376	237	166,613	1,[illegible].5	38.5	2,033	151	10	161		3,024.50	62.10	3,086.60	1,078.83	232.77	31.20	14.00	4,[illegible]

*Incomplete.

Note:- Under the W.E.C.W. Program the Central State and Nepco nurseries were worked from Camp 51S, Petenwell; the Iron County nursery was worked from Camp 89S, Upson; and the Trout Lake State Nursery was worked from Camp 74S, Crystal Lake.

Table 77. [illegible] Nursery Sanitation, Minnesota, 1923 - 1935 inc.

Name and Location Federal-State-Private	Acres Protected in Nursery	Ribes Eradication: Spacing	Year Worked	Acres Worked	Ribes Eradicated: Bulb. G.O.	Ribes Eradicated: Other	Costs: Items I.C.W.	Costs: Indian Service I.C.W.	Costs: Forest Service E.C.W.	Costs: Forest Service C.W.A.	Costs: Regular Federal and NRA	Costs: State B.R.O.	Costs: Owner	Costs: Total Costs	Remarks
Butternut; Butternut; Forest Service	30	1st*	1934	516	-	[illegible]			937.56					937.56	Formerly owned by Nekoosa-Edwards Paper Co.
		1st*	1935	360	-	[illegible]			1,599.50					1,599.50	
Chippewa; Chippewa; Forest Service	35	1st	1931	400	-	[illegible]						25.00	28.00	53.00	
		2nd	1932	400	-	[illegible]						95.00	105.00	200.00	
		3rd	1933	380	-	[illegible]			78.90					78.90	
		4th	1934	556	-	[illegible]			1,449.45	64.00				1,507.45	Protection zone limits extended.
		5th	1935	460	-	[illegible]			891.50	62.10				953.60	
Menominee Indian Reservation; Keepit; Indian Service	5	1st	1923	320	-	[illegible]					200.00			200.00	Ribes infection found in 1931 within protection zone. State cost includes $28.00 from Shawano County.
		2nd	1925	100	-	[illegible]							207.00	207.00	
		3rd	1932	280	-	[illegible]						26.14	160.00	186.14	
		4th	1934	72	-	[illegible]		148.96						148.96	
Central State; Wisconsin Rapids: State	1	1st	1932	290	-	[illegible]						-		-	Work done in 1932 by State Lumber.
		2nd	1933	166	-	[illegible]	34.48							34.48	
		3rd	1934	272	-	[illegible]	1,044.58							1,044.58	
Dexter; Wisconsin Rapids; Private	3	1st	1931	98	-		405.76							405.76	
		2nd	1932	195	-							8.00	4.05	12.05	Work done in 1932 by State Lumber.
		3rd	1933	113	-							-	-	-	
		4th	1934	122	-	[illegible]	3.00							3.00	
		5th	1935	92	-	[illegible]	820.57							820.57	
							240.10							240.10	
Iron County; Upson; Iron County	1	1st*	1935	241	-	[illegible]	998.56							998.56	
Trout Lake; Trout Lake: State	16	1st	1931	300	-	[illegible]						33.30		33.30	Conservation Department funds.
		2nd	1932	160	-	[illegible]						35.00		35.00	
		3rd	1934	222	-	[illegible]	454.40							454.40	
		4th	1935	269	-	[illegible]	449.76							449.76	
Goodman Lumber Co.; Goodman; Private	3	1st	1933	199	-	[illegible]	2,207.00							2,207.00	Ribes infection found in 1935 within protection zone.
		2nd	1934	216	-	[illegible]	2,464.84							2,464.84	
Hockey; Waterloo and Portland; Private	20	1st	1927	400	20	[illegible]						150.00	150.00	300.00	Information incomplete; estimated.
Totals	118			[illegible]**	26	[illegible]	1,113.08	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

* Incomplete.
** Computed by totaling various acreages worked at each nursery.

Cultivated Black Currant Breeding

[illegible]

[illegible] were transferred to cultivated black currant eradication work.

Table 75 summarizes the cultivated black currant eradication work performed during 1936.

Table 76 summarizes the CCC work that has been performed during 1935 and 1936.

Control Studies

Ribes Regeneration Studies

During 1936 permanent plots by individual Ribes types were established for the purpose of collecting data on the regeneration of Ribes after initial eradication. The data concerning each plot were recorded during 1936, and it is proposed that subsequent data will be collected yearly or periodically thereafter. The records will show the year that Ribes, having become re-established on the area in such quantities that the white pines no longer receive adequate protection against blister rust. The data will furnish a basis for determining, by individual Ribes types, when a second Ribes eradication is needed, whether or not a third eradication is necessary and the year that the area can be placed on a maintenance basis.

The plots were staked out before Ribes eradication and their location was not reported to the crews. All Ribes bushes found were listed by species; the live stem was measured and recorded to the nearest one-tenth of a foot. Information pertaining to the conditions with which the area had to contend, [illegible], was also kept.

Twenty-five Ribes regeneration study plots were established throughout central and northern Minnesota during 1936. The data on these plots are listed in Table 80.

Tables 81 and 82 summarize the studies made on these regeneration plots.

Informational Activities

The successful white pine blister rust control program in Minnesota, like any other public activity, is largely dependent upon public support for its success. Since the public supports the program, it is important that in return the public receives authentic information on the distribution of the disease, on the damage which the disease has caused [illegible] to go uncontrolled, on the fact that there is a practical control, on the method of control, and on the progress made in control work in Minnesota.

During 1936 direct contact was the chief medium through which this information was disseminated. Other methods used were: distribution of state and federal publications; articles printed in local newspapers; radio talks; [illegible] talks given at public meetings by blister rust control leaders; addresses given at schools and service clubs; [illegible] and the showing of motion pictures [illegible] of blister rust infections and of blister rust control activities in Minnesota.

[illegible]

[illegible]

Table 19. - Summary and Costs of [illegible] Dairy Current Eradication, Wisconsin, 1954 to 1965.

Year	No. of Counties Completed	Total No. of Inspections	DBI Herds Found	DBI Herds Destroyed	DBI Cows Found	DBI Cows [illegible]	[illegible] Man-Days Labor	Man-Days Supervision	Costs County	FSRA	Drought Relief	GSA	State	WPA	Total
1954	1	99,812	642	59	175	15	421	149	99.54	702.21	1,581.46	707.35	257.32		3,378.18
1958	60	475,490	13,983	13,085	2,943	[illegible]	10,851	1,083	205.96	945.79	8,505.05	7,104.67	618.13	38,187.50	50,660.91
Total	61	307,802	14,625	13,144	[illegible]	[illegible]	11,272	1,232	305.50	1,648.00	10,085.98	7,81[illegible].26	900.54	[illegible],487.85	[illegible]

[illegible]

Name of Owner	County	T.	R.	Sec.	'40'	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U. S. Forest Service [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 21. - Stand content in 8 stands containing 100 Pilsners in
Swamp (1) [illegible] Division as determined from permanent plots
Representative Area Plots, Tiverton, 1970

Item	Stand Number							
	1	2	3	4	5	6	7	Total
Number found	14.0	44.0	[illegible]	140.0	[illegible]	-	-	[illegible]
No. Pilsners per acre	797.5	2,970.0	1,657.5	665.0	145.0	-	-	[illegible]
B. D. H. Round	3,898.9	989.9	990.0	144.2	39.10	-	-	[illegible]
B. D. H. per acre	9,108.07	3,740.19	8,186.39	1,170.18	996.58	-	-	19,700.40
B. D. H. per tree	10.5	1.5	5.0	1.84	6.87	-	-	5.10

Stand content in 10 stands containing 300 Pilsners of
Sizes Surveyed in the Entire Tiverton Swamp permanent plots
Plots Surveyed in Spring Plots, Stands 1-10.

Number found	8	-	-	21	200	8	0	237
No. Pilsners per acre	80	-	-	80	1,200	80	30	1,570
B. D. H. Round	22.1	-	-	4.1	1,111.1	21.0	18.7	1,[illegible]
B. D. H. per acre	221.8	-	-	20.5	5,555.0	180.5	93.5	7,[illegible]
B. D. H. per tree	27.6	-	-	1.0	5.0	6.0	3.0	5.1

Table 22. - Comparison of number of trees
before and after Modification Cut, Tiverton, 1970.

Item	Stand Number										
	Trees	Cut	Left	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Number found	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B. D. H. Round	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B. D. H. per acre	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B. D. H. Remaining	[illegible]	[illegible]	[illegible]					[illegible]		[illegible]	[illegible]
B. D. H. Cut	[illegible]	[illegible]	[illegible]					[illegible]		[illegible]	[illegible]

[illegible] Slicker Rust by the Wisconsin Conservation Department during 1947 [illegible] "Stop the Wind," was prepared and [illegible] the edge of cooperating white pine stands [illegible] Wisc.

The conservation posters entitled, "Blister Rust Has Got Me," [illegible] "Blister Rust is Not Welcome in Wisconsin's Beauty," were placed in conspicuous locations on protected pine stands. These posters served a dual purpose. They explained the pines control measures, and brought to the attention of the public the numerous pine crops which were protected. To a number of landowner pine owners, who had their trees professionally regarded that the recommendations given to them pertained to their particular pine stands.

In the January issue of the State [illegible] magazine articles of white pines infected with blister rust were on display.

In several locations the Blister rust control personnel had [illegible] to remove their blister rust had killed many pine seedlings and in some cases older pines on a stand without the owner being aware of the agency responsible for the damage. It is the desire of this department to publish to the pine owners of Wisconsin this most urgent advice concerning disease of the pines in a pamphlet addressed to the future pine crop.

There is listed below some of the informational work conducted in Wisconsin during 1951.

Talks

(a) By foresters in State Forests, talks to groups of [illegible] boys on insects and plant diseases and their control measures.
(b) To the Fishing Class of Ellsworth High School and to the Boy Scouts at Ellsworth, Wisconsin, by Agent Gordon J. Mitchell.
(c) To a group of farmers at a meeting Hatfield Hall, [illegible] County, Wisconsin, by Agent George D. Gill.

(d) To a meeting at Sky Hill, Wisconsin, by Agent George D. Gill.
(e) To the Wisconsin Junior Forest Rangers at their State Meeting in Janesville, Wisconsin, by the State supervisor, who made an illustrated talk on the blister rust control work in Wisconsin.
(f) To county boards, by district Agent Ray Tabor, relative to continuing blister rust control work with [illegible] Inspectors. County approval was necessary since the county furnished a portion of the funds used to pay the Trainee Inspectors.
(g) To the Indians in the Red Cliff Indian Reservation by the State supervisor, who explained the need for white pine blister rust control work on the Red Cliff Indian Reservation.

Newspaper articles

(a) Articles on blister rust were published in the Wisconsin Department of Agriculture and Markets press bulletin. Each of these released was sent "free" to 150 weekly newspapers and 5 daily papers.
(b) Articles of local interest were frequently given to newspapers in the communities in which local control work was cultivated that current activities were sent to newspapers. At least one article

and educational [illegible] articles were published in the following newspapers during 1939: Ashland Press, Appleton Post-Crescent, Barron County News-Shield, Beaver Dam Citizen, Berlin Journal, Cambridge News, Chippewa Falls Herald-Telegram, [illegible] Advocate, Clintonville Tribune, Dunn County News, Durand Courier-Wedge, Eau Claire Leader, [illegible] Journal, [illegible], [illegible], Iron River Pioneer, Kenosha News, La Crosse Tribune and Leader Press, Marshfield News-Herald, Mellen Weekly Record, Milwaukee Journal, Milwaukee Sentinel, [illegible] Express, Monticello Messenger, [illegible] Tribune, Phillips Bee, Prairie du Chien Courier, [illegible] Times, Rhinelander Daily News, Rhinelander News, Rice Lake Chronotype, River Falls Times, Polish (Polish Newspaper published in Stevens Point, Wis.), Sawyer County Record and Republican, Shawano Journal, [illegible] Leader, Spooner Advocate, [illegible] Gazette, Stevens Point Daily Journal, Stoughton Courier, Superior Telegram, Taylor County News Star, The New North, The Forest Republican, Tomahawk Leader, Vilas County News-Review, Wausau Record-Herald, [illegible] Argus, [illegible] Enterprise, [illegible] Chronicle, [illegible] Gazette, and Wisconsin State Journal.

State and Federal Publications:

(a) Approximately 2,500 copies of the Wisconsin Department of Agriculture and Markets Bulletin No. 194, entitled, "Some of the More Important Insects and Plant Diseases of Trees and Shrubs," were distributed to interested persons.

(b) Approximately 2,000 leaflets entitled, "[illegible] White Pines, Control Blister Rust by Eradicating Currant and Gooseberry Bushes," were supplied and distributed by the Wisconsin Department of Agriculture and Markets.

(c) Information on the control of white pine blister rust was listed on the Wisconsin Conservation Department application blank entitled, "Application for Trees for Forest Planting." Those persons who desired to purchase seedlings for forest planting from the Conservation Department were furnished one of these blanks.

(d) Some 2,400 U.S.D.A. Miscellaneous Publications No. 22 (Rev.), entitled, "How Blister Rust Spreads and Destroys White Pines," were distributed to pine owners chiefly. A copy of this publication is inserted in this report on page [illegible].

(e) Approximately 200 bulletins on, "White Pine Blister Rust, a Multi-Million Dollar Menace," by Charles LaVerne Paul, were placed in County Agricultural Agents' offices, in [illegible] libraries and in C.C.C. camp libraries.

(f) Approximately 500 [illegible]-shaped posters [illegible] entitled, "These White Pines have been Protected from Blister Rust by the Removal of Currant and Gooseberry Bushes," were placed in conspicuous places in protected pine areas. The posters apparently helped to get the persons of the locality more interested in blister rust and its control.

Demonstrations:

(a) In several C.C.C. camps.

(b) At [illegible], Wisconsin, while ribes eradication work was being performed in [illegible] county; supervised by Agent George C. [illegible].

(c) At the [illegible] County Fair at [illegible], Wisconsin, July 25-27, 1939; supervised by [illegible] Senior Plant Pathologist Charles [illegible].

(d) At [illegible] County [illegible] near Black River Falls, Wisconsin, September

[illegible] [illegible] [illegible] [

Table 20. - State and Federal Expenditures for all Fishery Aid Control Projects, Minnesota, 1966.

Agency	Expenditure	Contractual Services	S.C.O. Admin. Services	Other Expenditures	Fishery Biol. Salaries	Fish. Sec. Biol. Salaries	Fish. Sec. Prod. Salaries	Fish. Sec. Preservation Lectures Survey	Fish. Sec. Crewing	Fish. Sec. Other Fixed Costs	Fish. Sec. Equipment and Lease	
1966	Salaries	[illegible]	[illegible]	[illegible]		[illegible]						[illegible]
	Expenses	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]					
	[illegible]		[illegible]	[illegible]		[illegible]						
F.W.P.C. County Contrib.	Salaries			[illegible]		[illegible]						[illegible]
	Expenses											
	[illegible]											
F.W.P.C. Federal Contrib.	Salaries			[illegible]		[illegible]						[illegible]
	Expenses											
	[illegible]			[illegible]								
Federal Grants Other	Salaries					[illegible]						
	Expenses											
	[illegible]											
F.T.A.	Salaries	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]				
	Expenses	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]				[illegible]
	[illegible]											
[illegible]	Salaries	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	Expenses	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]											
[illegible]	Salaries	-	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]		
[illegible]	Expenses	-	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]		
[illegible]	[illegible]											
[illegible]	Salaries			[illegible]				[illegible]				
[illegible]	Expenses			[illegible]				[illegible]				
	[illegible]											
[illegible]	Salaries	-	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		
[illegible]	Expenses	-	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]											
[illegible]	Salaries	[illegible]	[illegible]	[illegible]		[illegible]						[illegible]
[illegible]	Expenses	[illegible]	[illegible]	[illegible]		[illegible]					[illegible]	
	[illegible]											
	Salaries	[illegible]	[illegible]									[illegible]
[illegible]	Expenses	[illegible]	[illegible]									

Table [illegible] - Percent of Each Project Expenditure Spent by Each Agency, Wisconsin, 1966.

Agency	Supervision	Admin-istration	Labor Coordination	Tuberculosis Sani-tation	S.E.C.	Preliminary Investigations	Checking	Field Tests	Equipment Disp.	Tot.
State	61.2	20.7	10.3		27.4	0.6				100
County SCS			57.5		18.9					100
Federal SCS			28.9		14.1					100
Federal Drought Relief					100.0					100
DNR	10.7	16.0	85.6		36.4	3.2	0.8		3.3	100
Lower DPW	6.3	6.1	70.1	2.1		9.8	4.4	0.3	0.1	100
U.S. FCS		5.1	74.1	19.8			0.8	0.7		102
U.S. ECA			93.4			6.6				100
Tank. DPW		29.9	58.7	3.1		12.1	7.4	8.0		100
Ind.	1.9	1.2	70.7		26.1				2.0	100
Repair	50.0	50.0								100
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 8A. - Percent of Each Agency Expenditure Used on Each Project, Wisconsin, 1959.

Agency	Supervision	Agent Settlement	Video Production	Farmers Assistance	O.D.P.	Practical-Location Surveys	Teaching	Field Days	Equipment Misc.	Total
State	15.8	5.7	7.1		1.3	0.2				[illegible]
County Soil	-	-	0.7		0.4					[illegible]
Federal Soil	-	-	2.9		1.8					[illegible]
Federal Forest Service	-	-	-		16.7					[illegible]
ACI	18.3	26.7	3.7		14.0	6.2	5.0		15.5	[illegible]
State Ext.	36.2	25.4	28.9	49.0		44.6	66.0	55.8	.4	[illegible]
F.S. Ext.	-	4.6	4.3	46.1			7.9	29.6		[illegible]
I.S. Ext.	-	-	16.0			26.6				[illegible]
Tech. Ext.	-	7.4	0.7	4.7		0.3	5.1	14.0		[illegible]
VOC	30.0	16.7	40.5		55.9				66.1	[illegible]
Counties	2.2	4.2	-							[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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[illegible]

[illegible]

Conclusion

[illegible]

(7) Elliott rust control area in the state.

Elliott rust control areas in which the planting, possession or movement of pine or pines is regulated, were established throughout a review of this regulation appears following, quoted in full from the 1971 Minnesota Elliott rust control report:

"Elliott rust control area.

"The state Elliott rust law, (session laws of 1969, Chapter 916) gives to the Department of Conservation authority to establish Elliott rust control areas wherein the planting and possession of currants and gooseberries is prohibited. The establishment of Elliott rust control areas will aid in preventing the reappearance or additional growth of Pines near white pine stands and white pine producing nurseries and will facilitate the removal of alternate host species necessary to reduce the control of Elliott rust.

"The Commissioner's order of December 1, 1970, effected twenty, plus, especially all of the counties where pine areas in Elliott rust control areas, in Douglas, Otter Tailed, Itasca and St. Louis, dated February 25, 1971, established Elliott rust control areas around the white pine producing blocks of Cass, T. Fallon and Lake City Nurseries.

"The Elliott rust law provides and, for the regulation of planting or possession of currants and gooseberries. The Department of Conservation has authority to regulate the movement of shipments of currants and gooseberries. However, the Division of Nursery Inspection, Minnesota Department of Agriculture has such authority. This Division's regulations, issued February 15, 1971, prohibit the shipment of currant or gooseberry plants into a Elliott rust control area unless shipment is accompanied by a current or gooseberry planting permit issued by the Department of Conservation.

"Federal plant quarantine No. 55 was revoked effective June 15, 1971, adding Minnesota to the list of states that require shipments of currants and gooseberries coming into the state to be accompanied by a permit. The permit has prepared by the Bureau of Entomology and Plant Quarantine are issued by the Department of Conservation.

"Two types of permits are used for shipments coming into the state. The first, Form 416, is issued for specific shipments into the Elliott rust control areas. The second, Form 416-a, is used for shipments into those parts of Minnesota outside the Elliott rust control areas. The rest of state nurseries shipping in currants are form 416-a upon an application for a general permit. Upon the approval of this application by the Commissioner, a supply of general permits, blank permits have to work like. The complete the entries on form 416-a to the shipment of currants and/or gooseberries. The form 416-a and 416-b are mailed to the Commissioner.

"The purpose of Entomology and Plant Quarantine materials right interstate of nursery, stock number to interstate shipments. Thus we have limited the bulk of shipments coming into the state and almost full control of interstate movement of currants and gooseberries into the Elliott rust control areas.

"Right of shipments

Mr. Ward, Minnesota

Department of Conservation December 1, 1971

[illegible]

[illegible]

[illegible]

[illegible] road [illegible] in [illegible] county, thence S 17° 00' E, [illegible] chains, thence S 11° 00' E, [illegible] chains, thence S 21° 00' E, [illegible] chains, thence S 17° 00' E 40[illegible] chains to Deer Lodge Thomas northerly [illegible] approximately [illegible] chains, thence S 84° 30' E, [illegible] chains to point of beginning. Such boundaries are marked with white paint on trees and iron pipe.

[illegible] Lake, Jurisdiction Lake and Control Area located in Jefferson County, Tps. 2S T, R 2E M.P.M. and described as follows: Commencing at Village Road, 1[illegible] feet south from the junction of Village Road and Village Road, thence due west [illegible] feet, thence due north [illegible] feet, thence due east [illegible] feet to Village Road. Such boundaries are marked with white paint on trees.

State Conservation and State Engineer

Approved:

Approved February 22, 2001

Jerry M. Tolerance, Attorney General

By

Commissioner of Conservation — Assistant Attorney General

State of Wisconsin

Department of Agriculture Dairy and Food

Division of
Insect Control, Forestry and Apiary Inspection
University Farm, St. Paul

W. D. Trowbridge, Commissioner
A. T. Jordan, State Entomologist

Litter Bug Control Area
Circular 2,
February 28, 2000

Pierce Bug Control Area is Currently

Quarantined for Apiary Diseases and Pine-Cankers from Pine Bug Areas

*Pierce Area (or Bug-Area Quarantine only. Non-Pierce Quarantine Area consult Federal Quarantine No. 62)

The following areas is quarantined for pine bug sanitation as Litter Bug Control Area effective December 1, 1974 (See attached list of Areas).

It is hereby ordered that no cutting or processing plant shall be allowed into these areas without first obtaining a permit from the Commissioner of Conservation, State Office Building, St. Paul, Minnesota.

Within these areas are certain sections in which cutting or processing may be planned but the Commissioner may issue permits for planting such sections.

Before any felling of cutting or processing plants is made into the control areas the following procedure should be carried out:

Cemetery and Cemetery Plants

II. Prior to the commencement of operations, State Office [illegible] the land, locality, for a permit giving the name of purchaser, the owner and executor, and the legal description of the land where such are to be planted, i.e., Sec or SO, Rge., T.R.

III. The plants shall be entirely hardy and certificated. If not, they shall be flaged (except the rocks) just prior to shipment in a liquid solution of a strength of [illegible]. This solution is prepared by diluting 1 part of a concentrated flag dolphin solution of 12° baume with 5 parts of water.

IV. Issue the permit to each nurseryman carrying cemetery or burial plants in addition to the regular nursery certificate.

Selected Plants

Failure (Rapid) 5-leaved plants (sp. Pseudostrobus) may not be accepted as a General pine-shipping permit in addition to a valid state certificate.

The shipments into bilder root control areas of the following states, which:-

Connecticut	-	State Entomologist, Agr. Exp. Station (New Haven)
Iowa	-	Director, Bureau of Plant Industry (Ames)
Maine	-	State Horticulturist (Augusta)
Massachusetts	-	Director, Div. of Plant Pest Control (Boston)
Michigan	-	Inspector, Orchard & Nursery Insp. Serv. (Lansing)
New Hampshire	-	State Forestry Inspector (Durham)
New York	-	Director, Bureau of Plant Industry (Albany)
Rhode Island	-	State Entomologist, Bio Soil Lab. (Providence)
Vermont	-	Forest Commissioner (Montpelier)

List of Counties in Illinois Root Control Area:

Cook, Lake, St. Louis, Peoria, Bureau, Whiteside, Jefferson, Clearwater, Jackson, Decatur, Dubuque, Cass, Pine Bluff, Atlas, Texarkana, Ionia, Oliver, Pike and Carlton Counties. That portion of Marion County lying between the Mississippi River and United States Highway #10, including that portion in the city of Little Rock, lying east of the Mississippi River and formerly T. 5, Range 14 W., in Washington County. Nursery available stock and nursery plant have also been established for the U. S. Valley Tuberculosis and the Illinois Nursery.

A. G. Ingalls
State Entomologist

[illegible]

The blister rust control program is under the direct supervision of the State Leader who is responsible for the program in the State. The following agencies participated in one or more phases of the control work:

State Forestry Department	Emergency Conservation Work as
Conservation Commission	administered by:
Regular Appropriation	State Conservation Department
National Recovery Administration	U. S. Forest Service
Works Progress Administration	U. S. Indian Service

State Emergency Relief Administration (Directing Transient Relief)

Table 12 lists the approximately number of men employed monthly, by the various programs.

Work on Federal lands (Indian Service and Forest Service) was under the immediate supervision of a [illegible] while work on State and private lands was conducted through the three district offices, Walker, Duluth and St. Paul. A district agent is in charge of each district office.

Status of Infection

There was no spread of infection into counties, not previously reported infected, in Minnesota, during 1935. There was a general intensification of infection both on pine and Ribes, indicating that the rust continues to rapidly [illegible] a [illegible] in [illegible] young white pine throughout the northeastern quarter of the state.

Table 13 shows the extent of infection on Ribes and pine, according to counties, in the state at [illegible].

Pre-Eradication Surveys

The making of blister rust control work plans begins by acquiring accurate information as to the location, age stocking (number of trees per acre), of white pine and associated Ribes density and an estimate of the cost of protecting these white pine stands from blister rust.

This information is secured by making reconnaissance of white pine areas [illegible], at [illegible] data as to the number and age of white pine present and as to Ribes conditions such as number of bushes present, [illegible], etc.

[illegible] pre-eradication surveys were considered to be the job of the experienced personnel. However, during the latter part of 1935, [illegible] In previous years, [illegible] However, [illegible] As [illegible] the [illegible] will be [illegible].

In the past, the experienced personnel did all the office work [illegible] during the past year a large portion of the [illegible] work was done by [illegible] enrollees.

Table [illegible] - [illegible] Leader [illegible] [illegible]
[illegible]

Program	Positions	Jan.	Feb.	Mar.	April	May	June	July	[illegible]	[illegible]	Sept.	Oct.	Nov.	Dec.	Approx. No. Man months
Regular	State Leader											1	1	1	6
	State Leader	1	1	1	1	1	1								6
	Dist. Agents	2	2	2	2	2	2								12
4H	Supervisor	1	1	1	1	1	1								6
	Foreman		2	2											4
	Laborers					1	1								2
	[illegible]														[illegible]
	Technician	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	Director						1	1							2
FS-ECA	Foreman						2	2		2					4
	Laborers						100	[illegible]							107
	[illegible]														[illegible]
	Director						1	1							2
CS-ECA	Foreman						1	1							2
	Laborers						78	[illegible]							80
	[illegible]														[illegible]
FSRA	Laborers														[illegible]
	Foreman						1			1					2
State-ECA	Laborers						0	[illegible]							147
	[illegible]														[illegible]
	Foreman														2
Coop. Relief	Laborers														14
	[illegible]														[illegible]
	State Agents														6
State	Foreman									1		1			2
	[illegible]														[illegible]
	Dist. Agents									2		2	2	2	12
	Supervisors									3		2	3	3	14
	Unskilled-Skilled									2		10	11	8	46
	" -Intermediate									1		1			2
RPA	[illegible]														[illegible]
	Skilled-Skilled									0		0	8	8	32
	" -Intermediate									18		15	16	18	82
	" -Unskilled									[illegible]		173	141	106	[illegible]
	[illegible]												[illegible]	[illegible]	[illegible]
	[illegible]													[illegible]	[illegible]
	[illegible]												[illegible]	[illegible]	[illegible]
All Programs	Appointees-State Leader	1	1	1	1	1	1	1	1	1		1	1	1	12
	-Dist. Agents	2	2	2	2	2	2	2	2	2		2	2	2	22
	-Supervisors	2	2	2	2	2	2	2	2	3		3	4	4	44
	-Foremen		2	2			2	2	1	2		1	-	-	22
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
	Labor-Skilled								11	11		19	19	17	88
	-Intermediate								1	19		19	16	18	87
	-Unskilled					2	303	[illegible]	2	247		173	141	106	1,870
	[illegible]												[illegible]	[illegible]	[illegible]
	[illegible]												[illegible]	[illegible]	[illegible]

Table 17. Grade Rules of Schools in Accredited Graded Districts [illegible]

Grade Rules	Year	Other Technical Only	Grade 4 Tie Elevation: Year Tie Elevation Grade Level 1914 1917 1918 1919 [illegible]	Total No. Schools
[illegible]	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
[illegible]	[illegible]			
	[illegible]			
	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]			
	[illegible]			
	[illegible]			
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	[illegible]			
[illegible]	[illegible]			
	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]			
	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	Total [illegible]	[illegible]	[illegible]	[illegible]

[illegible]

During June 21, the area of insect damage was recorded [illegible] of 21,170 acres, as noted with good in varying degrees of the prospective [illegible] year planting after. Incidentally all of this accomplishment was by T.V.A. personnel.

The 1955 pre-evaluation survey results are given by counties in table 22.

According to labor estimates and actual figures taken from preservation survey the latest estimate of white pine acreages for Minnesota are as follows.

First priority white pine	57,[illegible]
Second " " "	10,[illegible]
Total large, mostly of production	362,[illegible]
Scattered white pine	300,[illegible]
Grand total white pine	[illegible]

Local Control

The 1955 pre-evaluation survey began in the latter half of May with work starting in the Red Lake-Tuttle Forest, Chippewa and Superior National Forest and the Chippewa Indian Tribal Forest.

A small amount of work was accomplished on two pine moths including their use labor in June and July. The TVA program started on July 15 and was responsible for over half the white pine acreage processed in 1955.

Cold blast evaluation continued until October 15. In previous years the cold blast application season ended not later than Oct. 1 and usually by September 15. The purpose of late application was to furnish replacements in numbers until local TVA projects could assign the man into off. In general, good work was done until application ceased. However, there are at least [illegible] jobs which must be completed next spring.

During the past two years, it has required slightly more than a man-year to protect an acre of white pine. In 1955, the man-day expenditure per acre of pine was reduced to 0.60. The reduction is largely the result of protecting second priority and scattered pine, than protection of such stands would be produced at a very low cost. In a number of cases, the pre-evaluation survey cost verification and scouting were combined into one operation. Still most of the work done on the Cloquet Forest Experiment Station and the 4,000 acres in Itasca County. The largest job was in the Mt. Ontia State Forest, a great job to protect a white pine plantation.

The most expensive work was in Pilsbury County, in northwestern Minnesota, where the man-days were required to protect an acre of white pine. This was the result of the large size of Pilsbury property, the scattered pine and not because the size of the individual pine lots protected was small, requiring the marking of a proportionally large acreage of protectable stands.

Table 21. - Grazing land - Cattle, January 1, 1950.

County	Number of file files						Cattle on hand			Cattle sold or slaughtered			[illegible]
	Int.	Ext.	Int.	Placed	P. Int	Total	Cows	Bulls	Total	Cows	Bulls	Total	
Cheyenne Co.													
Adams	120		30		1,700	1,850	850	1,545	2,395	350	511	861	17,414
Arapahoe	750	12	420			2,412	1,860	2,250	3,111	1,087	164	1,251	[illegible]
Elbert	20	23	130			183	7,148	90	8,189	1,080	209	1,217	[illegible]
Douglas	125	30	30			195	735	180	1,035	480	18	498	[illegible]
Jackson	5		8			13	87	10	103	80	20	42	[illegible]
Lincoln	8,149	9	1,910			10,080	10,137	5,390	15,146	7,571	177	7,748	[illegible]
Mills Lake	95	15	30			140	869	20	889	127	12	139	[illegible]
Washington	18		37			55	97	3	100	121	5	126	[illegible]
Yuma	69	11	47			127	37	87	124	113	27	140	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Garfield Co.													
Buck	3,067		850			3,886	121		Values	1118+		Fine	[illegible]
Lake	475					975	411		Values	1118+		Fine	[illegible]
Mt. Zeale	1,120	512	1,225			2,860	1,909	90	1,998	1,119	30	1,149	[illegible]
Sarpis			160			180	395		[illegible]	270	440	1,100	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]
Gilpin Co.													
Cheyenne	285	980	2,672			4,038	3,128	1,370	4,750	1,994	67	2,371	[illegible]
Cow Flat	690	1,001	11,371		99	13,751	1,800	16,195	17,995	2,110	1,754	3,764	[illegible]
Lake	1,192	1,004	18,507			21,698	5,490	12,560	17,050	3,471	4,530	10,001	[illegible]
Nuggets	1,189	550	2,374			3,283	1,417	2,700	4,117	1,324	2,181	3,505	[illegible]
Saltpeter	44	48	760			804	400	2,080	2,480	414	104	518	[illegible]
Water	807	807	1,751			3,415	3,095	3,082	6,177	3,771	1,086	4,857	[illegible]
Grand	3,409	5,890	23,489	11	588	30,084	16,181	18,779	34,959	17,087	4,761	21,973	[illegible]
Kilgore	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Gov. Forest													
Jackson	590	90			40	610	585	1,650	1,985	980	99	2,549	
[illegible]	54				4,465	4,795	4,430	490	5,920	2,400	17	2,417	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

In general, control costs were high in the northern part of the pine area, because of the small size of white pine (Scale (Jerzyk Forest's stock lots). In the northeastern part of the state, only limited areas of Ribes free lands were present. The cheapest control costs are to be found in the western side of the state white pine area. In the western district, there is a large acreage of second priority and scattered white pine growing in stands with jack and Norway pines. In general, these sites are Ribes free.

Table 26 lists all 1936 local control work, while in Table 27 all work since the inception is tabulated according to the year work was done.

Checking

From a practical standpoint, the complete elimination of Ribes from an area is impossible. The number of bushes left on an area after eradication is not an indication of the quality of the protection given white pine, as the potential pine damaging power of the Ribes present in or near a pine stand tends to vary directly as to the Ribes leaf surface present. Thus, one large bush may be more dangerous than fifty small ones.

Ribes leaf surface can be best readily measured in terms of feet of line or leaf bearing stem. The regional minimum standard of eradication efficiency permits leaving twenty-five feet of Ribes line stem per acre.

After the eradication of Ribes is completed in and around a white pine stand, the area is subjected to a formal inspection. Strips 13.2 feet wide are run at 10 chain intervals across checked acres. This results in a two per cent check of the area. The number of Ribes by species and feet of line or leaf bearing stem found on check strips is recorded by eradication types.

During 1936, about acres equivalent to 2[illegible].76 acres were run. The average number of bushes remaining after eradication was 5.16 per acre. The average feet of line stem 11.48 per acre.

Table 28 summarizes the 1936 checking results in Minnesota.

Nursery Sanitation

White pine, because of its ability and high yields, is a highly desirable species for forest planting. It is also a valuable wind break and ornamental species. Accordingly, it is grown extensively in private, state and federal forest tree producing nurseries in Minnesota.

With large numbers of small trees growing very close together in white pine seed beds and transplant rows, conditions for the occurrence of blister rust infection are comparatively ideal in nurseries.

Pine stem is susceptible to infection from blister rust from the time its primary leaves break through the soil. The control of blister rust begins in the nursery.

Because white pine planting stock may move long areas but are free of blister rust, absolute control of the disease must be assured. This means that a 1500 foot zone around the nursery white pine growing block must be kept as free of Ribes growth as is humanly possible and that a zone of one mile must be kept free of cultivated black currants.

[illegible]

Table NO. - Summary of local control by Years, Minnesota, 1919 to 1949 Inc.

Year	Acres Marked Initial	Acres Marked 2nd Grad.	Acres Marked Total	Total Trees Pulled	Total Cost	Per Acre Cost	Per Acre Pulls
1919	1,200	0	1,200	50,000	$[illegible],000.30	[illegible]	[illegible]
1920	2,440	0	2,440	316,304	[illegible],[illegible]0.20	[illegible]	[illegible]
1949	677	0	677	320,635	[illegible],130.05	7.[illegible]	[illegible]
1942	500	0	500	28,775	591.78	.[illegible]	[illegible]
1932	75	0	75	904	26.70	.[illegible]	[illegible]
1930	1,190	276	1,466	50,200	286.94	.[illegible]	[illegible]
1931	478	284	762	148,170	1,051.[illegible]	1.[illegible]	[illegible]
1941	164	40	204	26,076	260.[illegible]	.[illegible]	[illegible]
1928	18,615	0[illegible]	18,672	1,[illegible],570	12,[illegible],51	.[illegible]	[illegible]
1924	8[illegible],061	1,200	71,900	12,158,850	[illegible],[illegible].10	1.[illegible]	[illegible]
1929	[illegible],[illegible]0.0	504	[illegible],[illegible].0	3,070,[illegible]	80,[illegible].21	1.[illegible]	[illegible]
Total	[illegible],[illegible].5	6,[illegible]	352,[illegible].5	[illegible],[illegible],100	[illegible],[illegible].00	[illegible]	[illegible]

TABLE 40. - Dairying Statistics, Alaska: 1970

County	Patient "A"	Lower Cost	Upper Cost	Total	Total	Lower Cost	Upper Cost	Lower Cost	Upper Cost	Total	Total	Lower Cost	Upper Cost	Total	Total	Lower Cost	Upper Cost	Total	Total
District 1:																			
Ketchikan	1	-	3.80	.40	4.20	1	10	-	21.00	.40	21.01	1	19.16	2.71	19.13	-	[illegible]	.17	[illegible]
Sitka	1	11.50	10.41	1.50	19.48	11	19	11.50	15.08	14.79	41.38	1.14	7.49	.14	2.49	6.43	.47	1.34	6.71
Juneau	1	4.40	4.50	.40	9.10	1	1	8.00	.40	-	1.40	.46	.11	-	.40	2.43	.11	-	.40
Thorne Bay	1	.80	12.50	3.40	17.10	1	10	1.00	101.00	1.00	103.00	.07	11.02	.07	2.80	7.70	11.70	1.70	11.70
Kodiak	3	7.40	73.00	7.40	80.40	71	84	7.10	204.00	14.07	204.07	2.70	14.75	4.07	17.45	14.48	15.38	14.38	15.38
District 2:																			
[illegible] Tenakee	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
District 3:																			
Thane	10	4.40	95.84	18.48	100.40	10	14	14.50	58.00	82.00	100.00	6.71	.43	.08	.74	5.41	1.00	.42	.57
Cook	3	7.40	19.00	50.34	55.07	7	21	91.50	117.00	156.00	369.00	1.00	1.80	.50	1.49	4.47	5.14	1.73	5.43
Tokeinan	1	-	10.40	.07	10.40	-	44	-	103.00	-	103.00	-	5.00	-	1.32	-	1.32	-	5.14
Glacier	1	3.00	2.70	-	5.54	1	4	1.00	10.00	-	10.00	1.00	2.00	-	2.00	1.00	2.00	-	2.00
Cove Bay	1	1.00	-	101.07	101.07	14	-	17.00	-	4,000.00	4,000.00	13.71	-	15.75	29.40	-	2.75	-	20.40
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Totals																			
Southeast Area	1	18.25	15.41	16.54	70.20	306	404	199.10	398.80	24.25	554.15	55.07	4.54	5.40	9.94	19.72	8.70	1.00	10.70
Statewide Total	4	-	4.00	2.40	11.04	-	93	-	12.00	3.40	44.00	-	3.00	.40	3.00	-	1.10	.30	3.30
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Red Lake	[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Yukon [illegible]																			
Nome Census Area	4	.70	1.30	7.44	11.94	14	13	134.10	7.00	181.41	324.41	18.09	1.47	2.73	2.00	117.70	7.00	13.43	20.43
Cordova Valley	4	2.20	4.07	-	6.47	20	43	15.50	35.00	-	110.00	8.05	15.10	-	11.00	19.20	11.00	-	19.10
Cordova Sub. Dep.	4	-	-	7.07	7.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Nursery sanitation zones are carefully marked off in zone "Low" and "Hi" in the eradication areas. The zones of those nurseries dealing or holding Federal pine shipping permits are then inspected by a representative of the Division of Minnesota Plant Quarantine, Bureau of Entomology and Plant Quarantine.

Four Minnesota nurseries (L. - S. Bailey, Emmert, Lake City Nursery and U. S. Forest Service, Cass Lake) now hold Federal pine shipping permits. The final inspection of the three nurseries was completed July 1st.

The Pine Lake nursery sanitation area in the George Washington State Park was originally nearly Ribes free. Fortyseven fruiting ones removed from this area in August.

The Glenn nursery is a new nursery, established by State S.C.F. in the Minnesota State Forest in 1939. The nursery sanitation area around this nursery contains nearly 700 acres of semi-swamp type. It is impracticable to try to establish and maintain absolute sanitary conditions around this nursery. A reasonably clean condition should be maintained and the white pine stock produced should be used locally.

Table 01 (nonexistent) nursery sanitation work for 1935 in Minnesota, while in Table 02 nursery sanitation, since its start in 1930, is summarized.

Cultivated Black Currant Eradication

Laboratory investigations and field observations prove that the European, English or cultivated black currant, Ribes nigrum is far more susceptible to blister rust infection than are any other Minnesota species of Ribes.

This infecting spores are produced in large numbers by the cultivated black currant. These spores are capable of causing infection on pine up to distances of one mile. This species has been largely responsible for the establishment of new centers of pine infection.

A Federal plant quarantine regulation prohibits the shipment of cultivated black currants into the state. The nursery sale of Minnesota have not offered this species for sale for about 15 years.

Minnesota was among the last of the important white pine producing states to start a cultivated black current eradication program. In 1934 the project was restricted to the White Earth, George Washington and Grand Portage State Forests and the Superior and Chippewa National Forests.

In 1937, the project was tackled on a larger scale, using 99% labor. Men for the project were largely selected from the ranks of ex-employees in white Ribes eradication. Black current eradication crews consisted of two men. One man of the crew was selected for his ability to make contacts with property owners. One of the two men was a car and was paid mileage.

The Ribes current eradication accomplishments are summarized thusly:

Square miles covered	51,355
Miles of Travel	42,920
Properties inspected	28,055

Table 76. - Nursery Sanitation, Minnesota, 1935.

Nursery	Times Over	Cultivated Ribes Removed: Locations	Cultivated Ribes Removed: Bushes	Wild Ribes Removed: Ribes Type A Acres	Ribes Type A Bushes	Ribes Type B Acres	Ribes Type B Bushes	Ribes Type C Acres	Ribes Type C Bushes	Other Ribes Acres	All Types Acres	All Types Bushes	Man-days: Labor: Owner No.	Labor: Other No.	Labor: Other Prog.	Supervision No.	Supervision Prog.	Costs: Labor: Owner Amt.	Labor: Other Amt.	Labor: Other Prog.	Supervision Amt.	Supervision Prog.	Total Costs	Foreman
Commercial																								
L. W. Bailey	2							180	[illegible]	80	260	307	7½			10	Nira	11.25			63.21	Nira	74.46	Doell
Lake City	2	3	10					146	6,[illegible]	150	296	6,896	9			11	Nira	11.02			105.15	Nira	116.17	Doell
Sub Total		3	10					326	7,[illegible]	230	556	7,203	16½			21		22.27			168.36		190.63	
U.S. Forest Service																								
Lydick	6	11	621	1/2		70	1	155		175	400½	1		1½	FSECW	55	FSECW		5.49	FSECW	44.58	FSECW		Ritter
																4	Nira				40.00	Nira		and
																1	ECWTch				12.51	ECWTch.		Lundberg
Sub Total														1½		60			5.49		97.09		102.58	
State:																								
Cloquet-School of Forestry	1			4	333						4	333	10½			3	Nira	22.05			27.37	Nira	49.42	Ritter
Side Lake	1			1	27	239		Type C			240	27		½	StECW	½	StECW		.75	StECW	3.75	StECW	4.50	Clark
Gheen	1			Type 186	C 96,080	Type 3	D 0	Type 1	[illegible]	1	191	106,640		377	StECW	21½	StECW		565.50	StECW	140.68	StECW	706.18	Grant
Sub Total										1	435	107,000	10½	377½		25		22.05	566.25		171.80		760.10	
Red Lake Indian	1	10	37	Low 28	land 56,000	Up 30	land 32,000	[illegible]	[illegible]		180	88,935		47	IECW	3	IECW		90.09	IECW	15.75	IECW	105.84	
Totals		24	668							406	1,571½	203,139	27	426		109		44.32	661.83		452.00		1159.15	

Table 1 - Hatchery, Rearing Facilities, Stocking, 1955 to 1960.

Name	Location	Ownership	Approx. Acreage in Surface	Month-Day	Year Started	Collections: Gill Net Fall: Adult	Other	Sorts: Gill Net: Y.O.	Yearl.	S.C.	Regular Federal	State HSC	Local	Other	Total	Remarks
Gilley	Newport	Private	10	1st	1932		1	9,000	0	0	$ 34.19	24.20	12.40		$ 130.04	Forest Trans.
"	"	"		2nd	1934		0	970	0	0	69.60	0	31.20	12.40	113.25	" "
"	"	"		3rd	1935		0	507	0	0	23.21	0	11.85		74.45	" "
Lake Tiff	Lake Tiff	Private	10	1st	1929		0	15,015	0	0	88.56	165.60	140.00		301.86	Forest Trans.
" "	" "	"		2nd	1931	1	0	5,750	0	0	101.08		28.00	4.44	133.03	" "
" "	" "	"		3rd	1930	1	0	4,906	0	0	103.12		11.03		136.27	" "
Ferndale	Lake	Private	10	1st	1933		68	5,700	0	0	10.00	8.00	16.00		80.00	Information found in
"	"	"		2nd	1935		0	7,880	0	0	40.11	50.00	50.80		140.91	Hatchery, 1953.
St. Louis Co.	Eagle Pond	County	2	1st	1941		0	68,000	0	0	88.00		747.00		854.00	
" " "	" "		Contrib.		1933		0	5,000	0	0	21.70	2.00	48.75		89.75	
Chippewa	Pine Bay Crek.	State	20	1st	1930		0	84,921	0	0	30.15	13.08	75.80		118.43	Fees from no permits
"	" " "	"		2nd	1931		0	82,000	0	0	14.89	20.00	97.68		192.60	by College students.
"	" " "	"		3rd	1932		0	9,000	0	0	10.00	8.00	30.80		48.80	
"	" " "	"		5th	1934		0	30,007	500.00	0	16.00	5.00	32.10		198.10	
"	" " "	"		6th	1934		0	54,934	180.00	0	40.00	0	0	0.40	204.12	
"	" " "	"		7th	1935	4	0	285	0	0	29.29	0	48.03		48.42	
Nebonet	Nebonet	State	80	1st	1931	7	0	37,140	185.00	0	0	75.00	40.80		300.30	
"	"	"		1st	1934		2	17,047	165.00	0	27.65	0	0	12.04	218.09	Includes 27 adult
Pine Lake		State	80	1st	1930	10	0	47	47.00	0					47.00	but spawing.
" "		"		2nd	1934	13	0	37	4.00	—					4.00	
Deer Lake	Deer Lake	U.S.-F.S.	80	1st	1930	79	90	6,900	0	0	33.73	80.00			93.73	
" "	" "	" "		2nd	1931	30	55	8,670	0	0	18.85	110.35	32.00		180.70	Includes trade poli-
" "	" "	" "		3rd	1932	37	4	8,415	0	0	40.00	60.00	47.80		147.80	cies commercial
" "	" "	" "		4th	1940	0	0	17,070	0	899.07	13.00	45.00			458.73	Total $198.50.
Trout	Cass Lake	U.S.-F.S.	80	1st	1934	12	0	1,890	0	119.00	186.36			51.34	356.50	
"	" "	" "		2nd	1938	70	0	845	0	58.50	40.00				108.80	
Red Lake	Red Lake	I.R.-B.I.A.	0	1st	1940	10		60,000	108.54						108.54	
Lower	Superior Pond	State	5	1st	1930	0	0	100,000	706.16						706.16	

Total Berberis locations found	[illegible]
Seedlings removed	2,300
Bushes removed	10,244
Releases secured from property owners	[illegible]
Refusals to sign releases without objections to removal	[illegible]
[illegible] owners' objections	11

Considering the possibilities of unpleasant situations arising out of this project involving the use of the police power of the state, the results are very gratifying. The security wage workers, largely little more than common laborers, did the work well. The high proportion of releases secured indicates that their contacts with the property owners were good. The fact that the workers were mature, local men explains in part the success of these contacts.

A small portion of the work done by each crew in nearly every township was checked by one of the supervisory force. The results of this checking are given in Table [illegible].

Errors in plotting the locations of bushes on the maps, in [illegible] sites other than Berberis vulgaris, were recorded, but actually [illegible] errors. In the St. Paul District only one missed Berberis vulgaris location was found. All evidence indicated that the poor work was confined to one crew only. This township [illegible]. In the Duluth District, 12 townships, including [illegible] of Duluth, are scheduled to be reworked.

There remains 150 townships or about 5,400 square miles to be covered by this project. It is hoped that the project can be completed in 1942.

[illegible], especially [illegible], were resurveyed areas where the field surveys were made several years ago. These results indicate that the [illegible] to remove planted bushes, sprouts and seedlings [illegible] follow the initial eradication in about five years, at least in areas where large numbers of bushes were found.

WPA barberry work probably can be confined to Cook, Lake and St. Louis counties.

Table 90 shows the WPA eradication work in Minnesota during 1941.

Table 91 summarizes the township records, while in Table 92 the eradication work is summarized for 1940 and 1941. The WPA project was started in [illegible] 1940 and this table summarizes all work done to date.

Informational Activities

The purposes of informational activities are several, the most important of which is to interpret the [illegible] to [illegible] the value of [illegible] control. Informational activities are necessary to facilitate the [illegible] barberry eradication program and to acquaint property owners [illegible] with the State regulations [illegible].

[illegible] educational work by public agencies. [illegible], newspaper articles offer the greatest [illegible] for the [illegible]

TABLE [illegible] — [illegible] Trial Court Human Resources, Minnesota, [illegible]

County	Number of Dispositions	Number of Litigation Found	Number of Litigation Undetected	Number of Cases Charged Found	Number of Cases Charged Undetected	[illegible]	Locations Reported without Reason Court D.T.	Locations Reported without Reason Court Probating	[illegible] Locations Over Collections Cases	Number of Cases Collections Cases	Number of Cases Transcript	[illegible] Number of Cases Screened
District [illegible]												
Aitkin	447	-	-	-	-		-	-	32	1,[illegible]	590	[illegible]
Carlton	4,[illegible]	36	12	120	120	[illegible]	2	3	688	7,[illegible]	4,[illegible]	190
Cook	3,[illegible]	23	13	427	427	[illegible]	4	-	803	7,094	4,[illegible]	450
Lake	1,[illegible]	9	4	32	32	[illegible]	-	-	980	1,[illegible]	4,[illegible]	[illegible]
St. Louis	8,[illegible]	4	4	41	41	[illegible]	-	-	2,161	15,[illegible]	3,146	694
Pine [illegible]	2,[illegible]	15	15	180	180	[illegible]	1	-	677	5,[illegible]	1,[illegible]	370
Koochiching	485	1	1	9	9	[illegible]	-	-	141	1,[illegible]	958	83
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
District [illegible]												
Scott Terra	[illegible]	161	147	1,021	399	[illegible]	-	4	211	1,[illegible]	-	-
City of Duluth	6,[illegible]	1,[illegible]	1,[illegible]	11,093	10,[illegible]	[illegible]	41	15	4,[illegible]	[illegible]	-	-
Sac Pauline	116	-	-	-	-		-	-	4	42	-	-
St. Louis	17,080	519	309	1,[illegible]	5,[illegible]	[illegible]	5	1	7,[illegible]	[illegible]	[illegible]	4,[illegible]
Lake	5,[illegible]	3[illegible]	[illegible]	245	351	[illegible]	-	-	261	3,[illegible]	4,[illegible]	1,[illegible]
Cook	1[illegible]	14	11	8[illegible]	[illegible]	[illegible]	-	1	21	[illegible]	[illegible]	72
Carlton	5,[illegible]	190	189	1,[illegible]	1,[illegible]	[illegible]	-	4	764	7,[illegible]	6,[illegible]	380
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
District [illegible]												
Itasca	5,[illegible]	80	80	184	184	[illegible]	6	-	1,[illegible]	11,[illegible]	7,[illegible]	2,[illegible]
Koochiching	4,[illegible]	3	3	21	10	[illegible]	1	-	464	5,[illegible]	4,[illegible]	2,139
Cass	5,[illegible]	46	40	164	155	[illegible]	5	-	871	18,[illegible]	5,[illegible]	1,[illegible]
[illegible]	1,[illegible]	2	-	42	23	[illegible]	-	-	192	2,[illegible]	1,[illegible]	[illegible]
[illegible]	4,[illegible]	56	47	325	361	[illegible]	24	-	841	14,[illegible]	3,[illegible]	[illegible]
Crow Wing	8,[illegible]	108	[illegible]	882	[illegible]	[illegible]	9	-	1,[illegible]	18,[illegible]	8,[illegible]	4,[illegible]
[illegible]	35	-	-	-	-	[illegible]	-	-	7	42	39	18
[illegible]	1,[illegible]	44	71	142	123	[illegible]	3	-	465	11,[illegible]	1,[illegible]	1,[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* One reviewer reported but Duluth not yet received.

** Two reviewers assigned but Duluth not yet received.

Table [illegible] - Electric Current Availability Checking
Survey, Minnesota, 1958

County	Total Inspections	Total C.E.C. Locations	No. Locations Checked	% Locations Checked	Errors in Records	Errors in Not Placed Sites Figure Locations	% All Errors	% Total Locations
District #1								
Anoka	949		57	11	0	0	0	0
Chisago	4,522	54	165	4	15	5	9	0
Isanti	3,178	63	180	5	30	6	16	0
Kanabec	2,307	6	398	17	20	0	5	0
Pine	4,110	4	274	4	20	0	13	0
Pine	5,080	13	100	2	16	0	13	0
Washington	698	1	10	1	0	0	0	
Subtotals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
District #2								
Cook	105	19	12	12	0	0	0	0
Lake	3,893	90	348	9	0	8	1.1	8.9
St. Louis	15,050	317	1,000	6.6	0	5	0.5	3.8
Carlton	3,198	120	158	5	25	0	16.0	3
Itasca	687	17	40	6	5	0	12.5	3
City of Duluth	6,781	1,150	1,090	16	40	10	3.7	3.5
Subtotals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
District #3								
Itasca	4,705	60	1,027	17.0	59	0	5.4	0
Koochiching	4,177	2	158	3.8	5	0	3.5	[illegible]
Cass	5,570	52	211	3.7	22	0	10.0	[illegible]
Aitkin	1,261	2	0					
Hubbard	4,232	54	42	1.0	4	0	9.5	[illegible]
Crow Wing	8,240	108	282	3.3	30	0	9.5	0
Beltrami	53		7	13.2	0	2		2
Cass-Hubbard	4,727	35	22	.4	0	0		0
Subtotals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Grand Totals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17	[illegible]	[illegible]

Table 9E. - Cultivated Black Currant Eradication, Minnesota, 1934 - 1935.

Year	Total No. of Inspections	Found		Destroyed		Costs			
		Locations	Bushes	Locations	Bushes	USA	State	Ave	Total
1934	2,870	58	642	-	697	1,751.22			1,751.22
1935	48,654	1,700	19,651	2,290	18,944	110.09	80.86	38,385.17	38,496.50
Total	[illegible]	[illegible]	[illegible]	[illegible]	19,641	[illegible]	[illegible]	[illegible]	[illegible]

Port Ipsolsal. However, to make use of this medium, one must have information of definite news value to present to the public. Herewith follows a tabulating form the results of Minnesota efforts to secure newspaper space.

Newspaper Articles
1936

Class of Paper		To Inches	No. Publications	Total Inches space
Conservation Over Letter (Minnesota Department of Conservation)		6	116	702
		No. Papers		
Dailies Press		4	14	777
Rural Press		22	29	537
	Totals	26	163	1,216
Main Subject:				
Winter Dust Control Areas (State Regulations)				71
Stock Current Emigration				41
General Activities				85
Dropping White Pine				7
General				10
	Totals			167

Newspaper articles may be considered in two classes; i.e. those intended for publication in a definite paper at a definite time, and those intended for publication in any paper. The articles released through the Conservation News Letter are examples of the latter type of article. Eight releases were made through this medium in 1936. Since eight releases resulted in 116 publications.

Magazine articles offer an educational media, inferior to newspaper articles. Only a comparatively few articles are published. However, these are usually quite detailed. Only two articles were published during the year. One in "The Farmer", April 7, 1936, was short and called attention to the establishment of winter road control areas and resultant regulations. The second article in the "Minnesota Horticulturist", May, 1935, of about 200 words was more concrete. However, it called attention to the state regulations governing the transportation and planting of nurseries and gooseberries and was written with this in view as the primary purpose.

Included in the newspaper articles was one, one-third page feature story, in the Minneapolis Journal which dealt with part of the phase of winter road and the snowfall.

Another highly effective method of convincing a large number of people is through demonstrations at fairs and similar times. Only a limited number of individuals time contacted require a detailed knowledge of blister rust and its control. Most people attend fairs to be entertained and unless they are especially interested walk by the demonstrations and displays, picking up only a rather general idea presented. Herewith is listed our accomplishments for 1956:

Demonstrations

Farmer's & Rancher's Week	
University Farm	6,000
Forester's Day, University of Minnesota	500
Chisago County Fair	4,200
State Fair	100,000
Scottsboro County Fair	20,000
Duluth Garden and Flower Show	300
State Horticultural Society Show	500
	130,500

Field demonstrations of blister rust infection, damage and control are highly effective in informing a limited number of people as to the nature and use of blister rust controls. Most of these field trips involve only one or two individuals and are not recorded as an informational activity.

A visit to the Duluth Blister rust damage demonstration was included in the itinerary of the Minnesota Section of the Society of American Foresters, June 30 and July 1. Donald W. Stewart guided the group through the demonstration.

No effort was made during the year to obtain speaking engagements. The two talks given were by request to the organizations scheduled as follows:

4-H Club, Duluth Jr. College-		
E. G. Dahl		50
Annual Meeting, Minnesota Horticultural		
L. B. Kiber	Society	100

Costs

During 1956 in Minnesota $110,877.51 was spent in conducting the various phases of the control program. In Table #7 here are shown the various phases of the control program together with the expenditures accounting for the Agency's participation. The Agency costs are also broken into salaries and expenses.

The same costs are considered in Table #8 but are expressed in percent of what Agency expenditures spent on each phase of project in the control program.

In Table #9 these costs are expressed as the percent of each project expenditures spent by each agency during 1956 in Minnesota.

Conclusion

In spite of the increase in planting the 5#4 pressure, prohibitive rust is here realized in Minnesota during 1956.

TABLE 1 - Expenditure on all Other Local Council Projects in Tonbridge Rural for Financial Year 1973.

Activity	Expenditure Actual 1972-73 (£)	Original Estimate	Revised Estimate	Actual Expenditure 1973-74 (£)	Estimate 1974-75	Transfer to/from Reserves	Total
Parks	[illegible]	1,701.45	1,062.73	[illegible]	17.00		5,271.38
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]					1,268.0
Playing Fields	[illegible]	[illegible]					82.64
	[illegible]	[illegible]					[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
Sal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,[illegible].35
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wa	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tennis Courts	[illegible]		[illegible]	[illegible]			6,000.00
	[illegible]		77.65				77.65
	[illegible]		[illegible]	[illegible]			[illegible]
Bow	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]
Tennis	[illegible]	[illegible]		[illegible]	77.00		765.00
	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
Tr.	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]
Cr	[illegible]		[illegible]	[illegible]			[illegible]
	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]			[illegible]
Cr.	[illegible]		[illegible]	[illegible]			[illegible]
Cr	[illegible]		[illegible]				[illegible]
	[illegible]		[illegible]	[illegible]			[illegible]
Tennis	[illegible]		[illegible]				[illegible]
Cr.	[illegible]						[illegible]
	[illegible]		[illegible]				[illegible]
	[illegible]						[illegible]
Tennis	[illegible]	[illegible]					[illegible]
Bil	[illegible]						[illegible]
	[illegible]	[illegible]					[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 5[illegible]. - Percent of each Agency Expenditure Spent on each Project, Minnesota, 1[illegible]

Agency	Supervision & Agent Activity	Ribbon Eradication	Tuberculosis Vaccination	CBC Vaccination	Pre-Eradication Surveys	Total
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100
[illegible]	100	-	-	-	-	100
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100
[illegible]	[illegible]	[illegible]	-	[illegible]	[illegible]	100
[illegible]	-	[illegible]	[illegible]	-	-	100
[illegible]	[illegible]	-	[illegible]	-	[illegible]	100
[illegible]	-	[illegible]	[illegible]	-	[illegible]	100
[illegible]	-	[illegible]	[illegible]	-	-	100
[illegible]	-	[illegible]		-	-	100
[illegible]	100	-	-	-	-	100

Table 9b: - Percent of each Project Personnel time spent by each Agency, Alameda, 1980.

Agency	Supervision & Agent Activity	Other Distribution	Nursery Production	CSU Production	Pre-Employ-ment Training Service	Total
State	13.2	5.0	25.6	0.4	1.0	1.0
Rainbow	0.7	-	-	-	-	1.1
WCI	19.8	0.8	16.2	0.6	21.2	9.5
WTA	50.0	54.4	-	98.1	74.7	66.0
State DOR	-	5.6	60.7	-	-	2.0
DOR Tech.	15.8	-	1.2	-	1.1	3.0
TSA TSW	-	22.3	2.1	-	1.7	15.1
In-DOR	-	9.0	7.2	-	-	4.7
Brown Sal.	-	0.9	-	-	-	0.4
DGA	9.3	-	-	-	-	0.7
Total	100	100	100	100	100	100

The [illegible] rehabilitation program was continued and intensified with the result that the compilation, or the program, is [illegible] right.

To date, 75,[illegible],180 [illegible] have been received from 152,[illegible],5 [illegible] in giving protection to Minnesota's [illegible]. Approximately [illegible] percent of these accomplishments were realized during 1973 alone.

History of the Site

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]

During 1934, although nearly [illegible] plants were examined [illegible] pathologists and [illegible] throughout the state [illegible] infection was found on either [illegible] or Ribes.

During 1934, [illegible] of the white pine [illegible], bringing the total of white pine [illegible]. The major portion of this work [illegible].

[illegible] CCC, [illegible] white pine [illegible] County. [illegible] white pine [illegible].

The state leader, in 1935, also [illegible] white pine [illegible].

[illegible] in Iowa

White Pine Blister Rust Control in Iowa is a cooperative project between the United States Department of Agriculture and the Iowa Agricultural Experiment Station. [illegible] state, a Memorandum of Understanding was agreed upon and signed by [illegible] of the Iowa Agricultural Experiment Station. [illegible]

Organization

Except for the state leader no full time personnel was employed on blister rust control work in Iowa during 1935. [illegible] white pine [illegible] Mitchell [illegible] counties. [illegible] the state leader was the only person engaged in [illegible] work in the state.

Early in August the new Federal Works Progress Administration funds became available for use and the first WPA personnel was hired on August [illegible]. At the close of September two WPA agents were in the field. Agent [illegible] was assigned to the northeast district, consisting of [illegible], Winneshiek and Mitchell counties and Agent [illegible] Wilson was assigned

In the western district composed of Thompson, Gilmore and Jones counties, two of these agents employed a maximum of approximately 12 rehabilitation clients, which were consisting of a farmer paid at the rate of $70 per month and three or four laborers at $40 per month.

With a minimum of agents also in the field it was necessary to hire the crew foreman to do much of the advanced laboratory work which must should ordinarily fall upon an experienced agent. However, a good measure of success was obtained by virtue of consistent check-ups on the part of the field agents and the establishment of a crew rating system whereby each of the crews was rated according to accuracy, efficiency and dependability.

The crew foremen with but few exceptions, put forth very good effort and the allotments results were, generally speaking, rather satisfactory. The greatest single cause for unfavorable comment on the final results lies in the matter of checking. and field crews per .ine worked. These figures are comparatively high. This however, is due to the striving by the agents to quality rather than quantity of work, the resulting heavy labor conditions existing around the areas worked and the shortness of the 8hr field working day.

At the close of the rehabilitation period, (December 1st to 15th in the case of most crews) the organization was revised to fit the preservation and Cultivated Black Current survey phases of the state's program. Agent Wilson was released on December 15th. Agent Seely was became entirely in charge of all field work in the state.

The survey for Dumpsey Black Currants and white pine crews was conducted simultaneously in a number of counties during the period December 1st to December 31st. Two men were selected from each county in which work was to be performed. In most cases one of the two men was paid at a higher rate than his assistant, in a few cases however, the two workers agreed to be jointly responsible for the work in their county and were paid at the same rate.

In all WPA work the rates of pay for relief labor was set on a statewide basis at $40 for unskilled, $55 for intermediate and $70 for skilled. On November 16th these rates were changed to such amounts to conform with the prevailing country rate. This reduced the rate of pay in most counties in which blister rust control work was conducted. The county's rates for unskilled workers varied from $40 to $45 per month the intermediate workers from $42 to $55, and the skilled workers from $55 to $70.

In Table 100 there is graphically shown the organization used in Iowa during 1935.

Status of the Pest

Infection of white pine or ribes was not noted during 1935 in Iowa. All eradication crews was were admonished to be on the lookout for infection of ribes and pines. The state leader and agents visited sites of previous year infections at various times but found none. It seems rather unusual that no infection was found during the year as the climatic conditions were ideal for long spread to Ribes. Such spreads extended into Illinois and Indiana from Wisconsin and Michigan.

The status of infections previously found in Iowa is shown in Table 101

TABLE [illegible] - [illegible] Number of [illegible] Employed in Fishing Port Control Facilities in June, 1[illegible]

Facility	Position	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for Year
[illegible]	Port Master													
	Night Inspector	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]							[illegible]
[illegible]	Foreman					[illegible]	[illegible]							[illegible]
	Laborer					[illegible]	[illegible]							[illegible]
	[illegible]													
	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	-[illegible]								[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	-[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]							[illegible]						
[illegible]														
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]
	-[illegible]							[illegible]	[illegible]	[illegible]		[illegible]		[illegible]
	-[illegible]					[illegible]	[illegible]							
[illegible]														
[illegible]	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	-[illegible]								[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	-[illegible]					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]						[illegible]	[illegible]		[illegible]		[illegible]		
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Table 101. - Stem Infection in Iowa Counties Classified According to Year of Infection First Noted 1936.

Year Ribes Infection 1st Found	County	Ribes Infection Only	Ribes & Pine Infection with Date of Pine Infection 1917	1929	1931	1934	1935	Total of Counties
	Lyon*		*					1
1929	Linn*	*						
	Fayette	*						
	Story*				*			2
1934	Dubuque					*		1
Total	5	2	1	-	1	1	-	5

* Infection found on imported white pine and destroyed.

WHITE PINE

Native white pine occurs in Iowa [illegible] in the northeastern portion of the state where they occur as small isolated stands, occupying [illegible] acres. The Pine Hollow area, in northwestern Dubuque county, is the largest single white pine stand in the state.

White pine is used quite extensively in the state as a shelterbelt tree, particularly in the northern half of the state. In general, planted white pine makes excellent growth in the state, and has a comparatively low mortality.

White pine in the northeastern part of the state made exceptionally good growth during the 1938 season with extremely low mortality losses. The [illegible] of growth during 1938 in [illegible] stands less than 15 years old in the northeastern portion of the state, [illegible] individual white pine added three feet or more to their height during the season.

As a basis for shelterbelt protection in Iowa, a coniferous shelterbelt is defined as one having eight or more coniferous trees. A white pine shelterbelt is defined as one having eight or more white pine trees.

Using representative survey data available, it is estimated that there are, in the state:

40,000 to 50,000 coniferous shelterbelts,
7,000 to 8,000 white pine shelterbelts, or
1,000 to 1,500 acres of planted white pine, and
3,000 to 4,000 acres of native white pine

It is difficult to estimate the value of the white pine shelterbelts to the state. Farmers, on numerous occasions, have stated that they would not sell their trees for several hundred dollars. A well developed shelterbelt affords considerable protection to the farmers' stock and buildings, in addition to enhancing the value of the farmstead from a purely esthetic standpoint. An officer of a cemetery association located near [illegible] Dubuque in Dubuque county stated that the white pines on the cemetery grounds were worth as much as $500 each to the association, adding that these pines greatly enhanced the sale value of burial lots. Needless to say the cooperation of the association was easily obtained.

PRE-ERADICATION SURVEY

All pre-eradication survey work in Iowa during 1938 was performed by the WPA program with the exception of a very small amount of [illegible] for the purpose of [illegible] this activity.

Pre-eradication survey and [illegible] work [illegible] in most of the counties in which work was performed. [illegible] Ribes [illegible] These crews were [illegible] was driving a [illegible] at [illegible] per mile. The crew was supplied with appropriate record forms, [illegible] white pine [illegible] and [illegible] [illegible].

Table 102 is a summary of all pre-eradication work performed during 1938 in Black Hawk, Dubuque, Howard and Winneshiek counties. The survey was completed almost entirely in [illegible] pre-eradication [illegible] work having been completed in those counties.

It will be noted that the table shows seven white pine areas added in Dubuque and Howard counties. These areas are either new plantations since the last pre-eradication survey, or were missed in the original survey. In Winneshiek County the five areas added are located in the portion of the county which is now being initially surveyed.

Local Control

The major portion of local control work in Iowa during 1938 consisted of giving initial protection to planted windbreaks, woodlots and ornamental plantings. These plantings comprise a total of 108.3 acres of white pine contained in 508 jobs with an average of slightly more than one-half acre each. In Winneshiek County, 73.8 acres of native white pine were given initial protection. This acreage was contained in three areas.

Table 103 gives a summary of all local control work performed in Iowa in 1938 by counties. This table includes work by both agencies. Of this total, [illegible] man-days of labor, 62 were furnished under the [illegible] program during June; the remainder was by the WPA agency.

[illegible] total for the planted white pine, 71.9 acres, [illegible] were cleared of Ribes for each of the 508 jobs. A decided majority of this acreage was found to consist of cultivated Ribes — an average of [illegible] required to protect each white pine area. An average of approximately 10 cultivated Ribes and [illegible] wild Ribes was removed from within the [illegible] control area. The man-days of labor required to protect these jobs varied from 0.7 to 7.4 man-days in the several counties with an average for all counties of 1.4 man-days of labor.

Table 104 gives some data as to the size, condition and status of local control in the various counties. Of the 508 jobs which were listed by pre-eradication survey, 111 were found to be "not worth working". This figure includes jobs which were thrown out because of too few trees, high mortality, isolated trees or errors in pre-eradication survey. Of these, the errors in pre-eradication surveys are the most important factors. This is due to the fact that some of the counties, (notably Dubuque) were surveyed by agencies other than the regular blister rust control agency. These agencies were not primarily interested in [illegible] white pine [illegible] and the percentage of error through improper identification of conifers and [illegible], was high.

The amount of cooperation [illegible] on the basis of the total number of jobs on which the organization desired to perform work, disregarding those which were automatically thrown out for reasons above stated. On this basis [illegible] percent cooperation was secured from local cooperators. This percent of cooperation is perhaps a little lower than [illegible] but it is believed that approximately [illegible] is the [illegible] that could [illegible]. Under the WPA setup in Iowa, with a few [illegible] eradication crews and only [illegible], it [illegible] to require the organization [illegible] to make these [illegible] contacts and in a large measure to secure [illegible]

Table 102. - Summary of Pre-Emulsion Surveys, Iowa, 1950.

Counties	Value Flow: Tot. Gross Forest	Gross	A. to Ga Or. Forest	Est. M. B. Tot Eval	Value Tree.	% Cull	Flow-Lbr: Scaled	Lost	Costs: Lbr	Supervision	Other	Tot.
Allamakee	117	27.0	104	200	505	20	42	3	$105.00	$ 16.70	$ 16.20	$ 142.90
Black Hawk	0	0.0	0	0	0	100	0	0	0.00	0.00	0.00	0.00
Buchanan	20	20.3	207	394	505	10	37	6	125.00	14.80	19.60	159.40
Clayton	70	14.7	307	597	520	10	41	3	179.10	16.80	17.85	163.69
Clinton	9	2.0	18	47	150	5	10	0	47.60	6.50	6.35	54.47
Delaware	20	14.6	49	105	964	50	68	6	170.40	21.40	9.85	200.65
Dubuque	1	2.0	9	8	104	100	30	1	30.30	3.50	3.05	37.15
Fayette	44	15.3	51	185	410	10	56	8	102.50	13.75	14.65	130.90
Howard	8	2.8	18	0	140	100	13	0	34.40	4.70	6.00	45.10
Winneshiek	8	2.9	17	30	140	55	14	2	34.40	5.45	6.05	45.90
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Average	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* [illegible] Considering number of years in units.

TABLE [illegible] - Local Control by Operative and Personnel, Iowa, 1965.

County	Jobs Normal	Lines A.P. Total	Lines A.P. Per Job	Sows Total	Sows Per Job	Sows Farrowed Total	Sows Farrowed Per Job	[illegible]	Pigs Total	Pigs Per Job	Pigs Pulled Total	Pigs Pulled Per Job	Pigs Pulled Delivered Total	Pigs Pulled Delivered Per Job	Pigs Pulled Pre-Use Labor	Pigs Pulled Pre-Use Supply	Costs Labor	Costs Supervision	Costs Equipment	Costs Power & Crews	Costs Total
NW1																					
Plymouth	34	5.4	0.17	74.0	2.2	7,000	60.7	[illegible]	64.8	9,605	98	141	4.4	54	50	79.00	182.10	151.15	80.16	[illegible]
Sioux	40	32.7	0.80	80.3	1.8	8,500	70.5	[illegible]	64.3	9,072	224	250	7.5	50	50	131.00	104.00	191.10	100.10	[illegible]
Mitchell	29	17.1	0.59	99.7	3.4	2,[illegible]	70.2	[illegible]	65.3	9,[illegible]	464	287	9.7	54	13	38.00	81.40	191.15	15.22	[illegible]
NW2																					
Chickasaw	28	18.8	0.80	75.0	2.75	1,140	71.2	[illegible]	75.7	9,[illegible]	185	78	5.7	36	0	86.40	39.70		9.76	[illegible]
Delaware	80	4.0	0.47	82.0	14.60	2,256	64.5	[illegible]	59.4	13,034	590	90	5.6	148	5	508.70	40.00		20.06	[illegible]
Dubuque	91	52.7	5.52	850.0	44.07	5,[illegible]	71.0	[illegible]	78.3	15,434	1,066	640	7.0	662	30	2,938.50	170.20	306.60	120.50	[illegible]
Jones	140	61.6	0.45	581.7	4.15	9,958	68.5	[illegible]	79.5	16,[illegible]	424	1,369	11.9	547	50	3,845.00	186.15	104.20	111.05	[illegible]
Tama	9	5.8	0.61	88.0	9.10	590	75.0	[illegible]	75.3	11,[illegible]	1,505	12	3.3	50	50	848.00	56.10	15.10	15.01	[illegible]
Mitchell	44	13.7	0.31	169.4	3.8	1,910	77.4	[illegible]	65.5	17,[illegible]	760	320	20.0	142	8	548.00	42.00	19.00	10.75	[illegible]
Winneshiek	196	55.0	0.28	1,088.0	5.5	9,[illegible]	61.1	[illegible]	59.0	197,[illegible]	1,[illegible]	1,012	12.8	645	5	1,[illegible]	197.50	15.20	156.27	[illegible]
NW3																					
Hardin N.P. Disposing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* not including expensive cower labor in lump control of $400.00

Table 104. - Composition and Other Conditions of All Jobs by Counties
Iowa, 1950.

County	Jobs in Coop.	Per-cent Coop.	*Not work-ing	**Total Jobs Listed	Both Wild & Cultivated Jobs	%	Wild Only Jobs	%	Cult. Only Jobs	%	Other Food Jobs	%	Total Jobs	Per-cent
Chickasaw	1	94.1	1	17	4	28.0	8	57.0	2	14.3	0	0.0	14	100
Delaware	6	54.0	15	41	8	40.0	10	50.0	2	10.0	0	0.0	20	100
Johnson	15	52.5	94	185	54	35.6	77	48.8	5	8.4	8	11.2	91	100
Floyd	3	36.5	8	41	12	39.3	11	34.4	3	10.6	5	15.1	32	100
Pottawattamie	79	50.3	10	324	87	26.5	65	36.9	9	5.2	14	7.9	177	100
Tama	2	28.0	6	11	3	33.3	6	66.7	0	0.0	0	0.0	9	100
Clinton	49	54.7	49	116	35	34.1	51	34.4	3	2.9	4	3.6	51	100
Winneshiek	10	75.0	10	178	64	35.0	46	30.0	5	4.5	7	3.5	120	100
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Grand Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* "Jobs not worth working" includes those jobs with too few seeds, high morbidity, dormant, or worst in pre-emergence survey.

** "Total Jobs Listed" includes total jobs in which seed was performed and attempted. (Some Jobs not counted if not worth working or in Composite.)

Table 108. - Summary by Years of Pines Eradication Work, Iowa 1938-1956 Inc.

Year	Acres Worked Initial	Acres Worked Second	Acres Worked Total	Shelterbelt Jobs	Pines Pulled	Total Cost	Per Acre Cost	Per Acre Pines	Cost per bush. cents
1938	1,608	-	1,608	-	31,806	$ 1,416.00	.88	19.8	7.4
1939	69,465	-	69,439	776	650,000	15,269.00	.22	93.6	2.4
1940	38,714	-	38,714	4007	480,774	10,247.49	.28	119.2	2.9
Total	[illegible]	-	[illegible]	4,783*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Including 3 native crews.

TABLE 106. - Summary of Operations, Iowa, 1935.

County	Forest Acres Crew Work	Forest Acres Scout Work	Forest No. of Jobs	Av. Miles per L. Crew Tot. Areas	Jobs Changed	Shelter Acres Crew Work Total	Shelter Acres Crew Work %	Shelter Acres Scout Work Total	Shelter Acres Scout Work %	Trout in Space Cold. Miles Checked	Trout in Space WPA Miles Checked	Trout in Space WPA Miles Total	Fish Per A.Or Wtg.	Fish Trout Lbs.	Fish Trout %
Delaware	55	1,094	20	154	14	68	100.0	884	92.5	98	38	686	6.8	17	[illegible]
Dubuque	696	2,999	91	150	77	384	82.0	4,054	96.9	0	1,907	2,010	[illegible]	49	[illegible]
Floyd	[illegible]	2,000	56	34	15	50	47.6	1,850	81.7	0	39	114	[illegible]	15	[illegible]
Howard	760	11,884	177	99	141	144	14.8	3,540	87.3	4	564	4,090	18.0	207	[illegible]
Iowa	40	390	7	120	10	28	160.0	460	79.1	0	40	528	11.2	4	[illegible]
Mitchell	852	4,111	81	109	28	30	35.8	5,005	84.7	0	26	887	[illegible]	27	[illegible]
Winneshiek	1,080	7,366	183	150	25	38	9.2	845	6.1	0	1,462	3,369	18.1	17	[illegible]
Total	[illegible]	29,100	57	[illegible]	[illegible]	[illegible]	28.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Based on jobs actually checked.

since. In 1936 several cultivated Ribes bushes were found and more than 5000 wild bushes were eradicated from 238 acres covered by the areas. The greater portion of these bushes were one year seedlings found in the areas previously occupied by large, open-crown Ribes sylvestrinum.

Nursery sanitation was first performed in 1932 on the property of the Mount Arbor Nursery at Shenandoah. The wild Ribes condition on the land within the 1500 foot zone at this nursery was found to be rather light and the greatest amount of work was entailed in the elimination of cultivated Ribes. In 1936 no cultivated bushes were found and 14 wild Ribes were eradicated. However, upon examination by the Federal Quarantine Inspector approximately 25,000 Ribes alpinum seedlings were found under cultivation within the nursery itself. It is understood that the inspector recommended that a permit be granted to this nursery for shipment of white pine to infested states. This in view of finding Ribes alpinum in seedling beds.

Nursery sanitation was first performed in the environs of the Scotch Grove Nursery in 1933. The first complete working was performed in 1936 when 84 cultivated Ribes and 526 wild Ribes were removed.

Table 107 is a summary of all nursery sanitation work performed in Iowa during 1935.

Table 108 covers nursery sanitation work in Iowa since it was first started to and including 1935.

Cultivated Black Currant Eradication

The first systematic cultivated black currant elimination program in Iowa was initiated during 1935. After local control work had stopped in the fall, and as previously stated, preeradication and black currant surveys were begun in a number of counties in the northeastern part of Iowa.

Table 109 is a summary of all black currant elimination work conducted in the state during the current year. This work has largely been in the form of surveys rather than an actual eradication program. This naturally is due to the fact that the actual process of digging the bushes was halted by early freezing weather. EPA funds were used entirely on the black currant project with the exception of a very small amount of supervisory expenses which were paid from Nira funds.

A total of 16,152 gardens and backyards were examined for the presence of cultivated black currant with 126 locations found of which 61 were destroyed. A very high percentage of these locations occurred in three of the two counties in which work was performed, namely, Delaware, Dubuque and Winneshiek. The city of Dubuque contains a relatively high Ribes nigrum population. For all the areas covered an average of slightly over eight locations was found per 1000 inspections. This relatively low figure is of course, gratifying in that it will be comparatively easy to complete the black currant elimination program.

As indicated above, no concerted effort has been made to secure the permission of owners of black currants to relinquish the bushes.

Of the total locations found nearly 60% have been destroyed. Cooperation from the owners of these destroyed locations was secured almost entirely by the

[illegible]

Name / Location	Where in Film Times	Time Distribution: Morning	Afternoon	Evening	Night	[illegible]
Earl Theatre Chapley	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Science Drama Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mt. Drama Theatre[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						

[illegible] Not included in [illegible] trade [illegible]

[illegible]

Name / Location	Where in Film Stock	Time Distribution: Morning	Afternoon	Evening	Night	[illegible]
Earl Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Science Drama Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mt. Drama Theatre[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						

[illegible]

Name / Location	Expenses: Labor	Hours	Rate	Cost: Labor	Hours	Rate	Cost: Other	Other	Total
Earl Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Science Drama Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mt. Drama Theatre[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]									

[illegible]

Name / Location	Expenses: Labor	Hours	Rate	Cost: Labor	Hours	Rate	Cost: Other	Other	Total
Earl Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Science Drama Theatre Theatre	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mt. Drama Theatre[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]									

Table 108. - Summary of Cultivated Elgob Dutrex Eradication Program, Iowa, 1935.

Counties	O.E.G. Locations Found	O.E.G. Locations Destroyed	O.E.G. Hosts Found	O.E.G. Hosts Destroyed	No. of Insp'ns.	Locat'n per 1000 Insp'ns.	% County Com-plete	Man-days Spent	Miles Trav-eled	Costs Labor	Costs Sup'r'n	Costs Other	Costs Total
Allamakee	9	0	2	0	1,255	1.6	30	94	003	$ 98.80	$ 3.95	$ 18.27	$ [illegible]
Black Hawk	0	0	0	0	4,014	0.0	15	20	0	70.00	0.70	0.00	[illegible]
Buchanan	2	0	20	0	518	3.9	16	17	452	48.75	7.55	18.38	[illegible]
Chickasaw	1	0	1	0	665	1.5	18	14	537	58.10	6.85	19.81	[illegible]
Clayton	1	0	5	0	35	31.5	5	11	180	87.50	5.55	6.00	[illegible]
Delaware	17	14	95	86	748	58.7	30	27	889	67.50	5.30	14.00	[illegible]
Dubuque	83	34	530	95	1,858	65.9	80	181	1,556	325.80	21.75	63.56	471.[illegible]
Fayette	4	1	5	1	491	8.2	10	19	566	54.80	8.15	13.62	76.[illegible]
Howard	1	0	3	0	1,099	0.9	45	67	1,729	162.80	10.00	66.95	239.[illegible]
Jackson	15	18	52	56	5,073	3.1	45	71	1,910	291.35	16.15	68.08	3[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* P.I.E.A. Expenditures, general expenses of supervision only.

** Increase in man-days lost due to incidental sickle.

workers, rather than by district agents or others. Of the 50% of locations remaining undisturbed it is estimated that removal was not attempted in 75% of the cases. After the ground had become frozen it was deemed advisable, in view of the relatively few bushes per thousand inspections, to leave until the 1938 eradication season, the task of securing cooperation and subsequent eradication.

To summarize the black current situation in Iowa then, it is believed that the ultimate desired results can be obtained with a minimum of difficulty.

The question may be raised as to the dependability of reports from black current survey crews. As much checking as possible was performed and crews starting on black current work were contacted as frequently as possible with the view of learning whether or not the workers were able to identify the black currant. In most cases specimens were taken from located bushes and verified by the blister rust Agent. It was noted that crews often brought specimens from other than black currant bushes. The American black currant was more commonly confused with the European black currant. Repeated instructions and demonstrations have, it is believed, enabled the workers to become more sure of the identity of bushes encountered.

Informational Activities

Information on white pine blister rust and its control was made available to a considerable number of Iowans during the year 1936. Four mediums were used in disseminating information, namely, personal interviews, the press, radio, and the distribution of printed material. Approximately 3000 of the Miscellaneous Publication No. 22 entitled "Protect White Pine from Blister Rust" by Doctor Martin, were handed out by field workers to pine owners and other interested persons. Approximately 1000 of the Miscellaneous Publication No. 27 entitled "Black Currant Spreads White Pine Blister Rust" by Mr. Detwiler, were distributed to pine owners, owners of European Black Currant, and others. These two publications were found to be particularly valuable in the hands of more or less inexperienced workers such as the CWA personnel.

On August 2nd the state leader held a one hour discussion with the fourteen agents employed in barberry eradication. The object of the discussion was to give the barberry agents a talking knowledge of the blister rust project, so that they might better be able to answer questions arising in the field. Definite benefits were realized, for several of the personnel of the barberry eradication project have been able to make favorable and enlightening comments to inquirers in the field.

On August 7th the state leader read a paper prepared in the Washington office and slightly revised in the state office, over radio station WOI the college station at Ames. On this same date the same paper was read by local announcers on the so-called "Farm Flash Program" over seven stations located in all parts of the state, including Des Moines, Waterloo, Council Bluffs, Sioux City, Shenandoah, Decorah and Marshalltown.

On October 5th, District Agent Harold H. Hasty read a prepared paper over a radio station at Decorah, Iowa, having a local coverage of about 100,000 families. This talk proved to be very fruitful for many local cooperators heard the broadcast and were more willing to cooperate with the WPA crew foreman.

On January 18th the State Leader gave a talk to about forty sophomore

forestry students at Iowa State College.

On August 7th a blister rust news item appeared in the publication known as Better Iowa. This publication is not for distribution among the general public but rather is sent through the extension service to approximately 600 weekly and daily papers. Articles appearing in this publication are offered in this form to editors who are free to use any or all of the articles. The number of newspapers which actually carried the blister rust article is not known but is estimated at 50 or 60.

Several news items were prepared in the state office and transmitted to newspaper editors in the counties in which local control or survey work was being conducted. Approximately 25 of such items were published.

On October 11th an article prepared in the state office appeared in the Decorah Posten which allegedly is a semi-official organ of the Norwegian people of the United States.

On December 3rd the State Leader gave a talk to approximately twenty persons comprising the regular weekly pathology seminar held under the direction of the Plant Pathology Section, Botany Department, Iowa State College.

On December 5th the State Leader talked to each of two sections of freshmen forestry students at the College, a total of approximately fifty-five students.

Transit Inspection

Transit inspection work, while not strictly a blister rust activity, is given a place in this report in order that the total of work performed by the Iowa blister rust control personnel may be shown.

On February 25th, 1935, the State Leader reported to Mr. J. M. Corliss, Agent in Charge, Domestic Plant Quarantine, Chicago, Illinois and approximately nine weeks were spent in Chicago on transit inspection work.

During this time 12 Domestic Quarantines were in force. In addition to inspecting for Federal Violations the inspectors also watched for violations of state plant quarantines. Following is a summary of the work accomplished in Chicago by the Iowa State Leader. It will be noted that two violations were intercepted on account of the white pine blister rust quarantine, No. 43. One of these consisted of a shipment of forest-grown western white pine seedlings in transit from Washington State to a point in Indiana. Most of the seedlings in this shipment were actually infected with the blister rust.

Total packages examined in mail, express and freight,		8,082
Total number of violations of State Plant Quarantines intercepted,		99
Federal Violations of Domestic Plant Quarantines Intercepted,		
Quar. #30 -	1	
" 45	3	
" 43	15	
" 55	2	
" 92	4	
" 98	2	
D.C. Reg.	7	34

Table 110. - State and Federal Expenditures for 111 Glider Dust Control Projects, Iowa, During Calendar Year 1936.

Agency	Expenditure classification	Supervision	Fiber Creation	Nursery Sanitation	Cult. black current creation	Field data Pre-creation Survey	Total
State	Salaries		480.00				480.00
	Expenses	1,850.00		90.00			1,940.00
	Total	1,850.00	480.00	90.00			[illegible]
Regular B.E.C.	Salaries	1,858.31					1,858.31
	Expenses	55.98					55.98
	Total	1,914.29					[illegible]
N.Y.A.	Salaries	920.00	900.95	889.00			[illegible]
	Expenses	587.60	686.90	184.66	54.80	86.37	1,600.[illegible]
	Total	1,507.60*	1,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
W.P.A.	Salaries	518.00	7,969.40		1,525.85	900.86	[illegible]
	Expenses	48.11	591.44		856.69	104.11	[illegible]
	Total	566.11	[illegible]		[illegible]	[illegible]	[illegible]
Total	Salaries	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Expenses	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Includes Transit Inspection (Salary $445.00, Expense 97.00)

Table 111. - Percent of Expenditures of Joint Agency Spent on Each Activity: Iowa, 1968.

Agency	Supervision	Aerial Eradication	Survey Satisfaction	U.S.D.A. Eradication	Pre-eradication Surveys	Total
State	77.9	20.2	2.2			100.
Regular	100.					100.
CRA	36.8	49.7	12.6	0.9	0.9	100.
ERA	5.2	94.8		15.8	8.8	100.
Total	32.5	57.4	4.7	6.1	3.3	100.

Table 119. - Percent of Activity Costs Spent by Each Agency: Iowa, 1968.

Agency	Supervision	Aerial Eradication	Survey Satisfaction	U.S.D.A. Eradication	Pre-eradication Surveys	Total
State	38.2	6.4	8.9			13.2
Regular	26.9					5.1
CRA	57.3	16.6	90.1	1.6	97.4	19.1
ERA	7.6	79.1		98.4	2.6	61.6
Total	100.	100.	100.	100.	100.	100.

Costs

In computing costs of the 1951 control work in Iowa several outstanding factors were evaluated and entered in costs. Office space, the supervisory time of Prof. McDonald, plus owners contributed time for eradication work and nursery inspectors expenses are all shown as state contributions.

The 1952 Iowa costs for all phases of BB Control are listed in Table [illegible] according to agency entering into the work and phase of the work in which a part was taken.

Table III shows percent of expenditures of each agency spent on each activity while Table III shows percent of activity costs spent by each agency.

Conclusion

The important native white pine stands in the state have received initial protection. The friars of counties surrounding the important pine shelterbelt counties in the northeast corner of the State have also received initial protection. It is planned, therefore, for the coming year to devote major attention to shelterbelt work in the extreme northeast width of the State and to the eradication of CBC bushes in the entire northeast quarter.

The cost of local control performed on areas where BB roots were present was considerably higher than for the work performed in past years by other programs. This is due in part to the inadequacy of supervision, causing the need for stress-ing quality rather than quantity of work; and also due to the fact that area, noted in 1951 was of somewhat different working conditions, - that is, there was more area work per job and heavier slash concentrations.

History of Work

(The history of Blister Rust Control Work in Illinois is reviewed thoroughly in the 1954 Region Report. A limited amount of work was done in 1956 and only that work is considered in this report).

No work in the state, other than scouting for rust on Ribes, was officially planned for 1956, hence no Memorandum of Understanding was drawn up. The local control performed was third and fourth eradication and was done without official SC supervision.

During the latter part of September 1955, Mr. J. E. Corlis found infection on CRC bushes at Warren in Jo Daviess County, Illinois. This is the first finding of infection in Illinois. On September 23, 24 and 25 Steele and Franklin scouted many CRC locations along the northern tier of counties but failed to find further infection.

Table 113 shows the approximate number of persons engaged in Blister Rust Control in Illinois during 1956.

Local control was performed (third eradication) at the Pines State Park at Polo, Illinois by the Parks CCC camp located in the park.

Co-Governor Lowden had his own man perform a fourth eradication on his estate near Oregon, Illinois.

The results of the above eradication work are shown in Table 114.

In Table 115 local control work by years is summarized.

Costs

The costs of the 1956 control program in Illinois are given in Table 116.

Summary and Conclusion

In checking the work that was done during 1956 a point was brought to mind very forcibly and that is, good work is seldom accomplished without adequate supervision. The two jobs done during 1956 were not of a good quality and it is hoped that in the not too distant future, supervision can be given to the Illinois work that will assure satisfactory work. This is not an attempt to discredit the work performed but to bring out the fact that in spite of the conscientious efforts, the work was not satisfactory.

It is not known what effect the finding of infection in Illinois will have upon the inter-state shipping status of white pine growing nurseries within the state.

Table 115. - Approximate Number of Men Employed on Silver Bell Control Activities in Illinois, 1953.

Program	Position	May	August	Approx. No. Man Months
State	Laborers	4*		4*
Parks-Rec	Foreman		1**	1**
	Laborers		15**	15**
	Total		16	16
	Total	4	16	[illegible]
All Programs	Foreman		1	1
	Laborers	4	16	20
	Total	4	17	[illegible]

* Worked a few days in May.

** Worked one half month in August.

[illegible]

Product	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Plywood [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lumber [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 116. - Expenditures for All Sister Rust Control Projects in Illinois During the Calendar Year, 1956

Agency	Expenditure Classification	Sites Eradication	Total
State	Salaries	38.40	38.40
	Expenses	-	-
	Total	38.40	38.40
Farm ES	Salaries	166.00	166.00
	Expenses	3.00	3.00
	Total	169.00	169.00
Total	Salaries	[illegible]	[illegible]
	Expenses	[illegible]	[illegible]
	Total	[illegible]	[illegible]

History of Work

(See the 1954 Regional Report for the History of Blister Rust Control work in Indiana. No control work, other than some limited scouting for infection on Ribes, was done during 1955. For that reason details of the status and history of work is not reviewed in this report).

From September 20 to 27, 1956, Shenk and Franklin scouted the northeastern of counties in Indiana and found Ribes infection at two locations. In LaGrange County, about 6 miles east of Howe, scattered infection was found on Ribes cynosbati and R. americanum. In LaPorte County near Lake Hudson, light infection was found on Ribes cynosbati.

This marks the first time infection has been found on native hosts in Indiana.

For handy reference there is carried in this report Table 117 which summarizes all local control for the years 1953 and 1954.

Table 117. - Summary by Years, Local Control, Indiana, 1953-54.

Year	Acres Scouted	Ribes Pulled	Total Cost	Per Acre Cost	Per Acre Ribes	Cost Per Plant
1953	1,815	16,066	866.80	.48	19.2	0.054
1954	1,880	40,880	3,118.96	.49	18.9	0.076
Total	3,715	56,946	3,985.76	.49	19.1	[illegible]

Summary and Conclusion

A big white pine planting program is being waged in Indiana and it is planned to pause local control efforts in that state during the coming year.

It is rather substantially reported that no commercial nurseries in Indiana grow white pine. Therefore, the finding of infection in the state will actually have little effect in the state other than to stimulate local control and cause further nursery sanitation action around the two state and one U. S. Forest Service nurseries.

History of Work

Prior to 1913, blister rust had been found at two nurseries, the R. Hess Nursery at Akron on white pine imported from S. T. Dickinson, Chatenay, France, in 1910; and the Storrs and Harrison Nursery, Painesville, on white pine imported from France in 1910 and 1911.

Diseased white pine had been shipped from S. Jenkins Nursery at Ithaca in the spring of 1911 to I. Hicks & Son, Westbury, Long Island, N. Y.

One infected pine was found in 1916 at the Storrs and Harrison Nursery, Painesville, from the same stock of pines imported from France. The entire pine stock was destroyed in 1918.

From 1917 to 1920 scouting work was conducted by Federal employees in cooperation with the State Nursery Inspection Service. Major emphasis was placed on inspection of planted white pine from infected nurseries. No rust was found except on two infested pines found in 1917 at a nursery near Cuyahoga Falls in Summit County. These were in a lot of 1,000 pines imported from a Minnesota nursery in 1915. This entire shipment was destroyed in 1917.

No further work was done until 1931 when Messrs. Steele and Pierce made a short scouting trip to the northern portion of the state. They found blister rust on Ribes at four locations in the extreme northwestern corner of the state and one in the northeastern corner. At three of these locations infection was found on Ribes nigrum and two on R. Cynosbati.

In 1932 the only work done was a two-day trip through Ohio made by Putnam principally for the purpose of interviewing officials regarding blister rust control work. No rust was found.

In 1933, Fivaz started Ribes eradication work at CCC camp Mohican. Later in the fall Oscar J. Dowd was appointed state leader and conducted control work under a Memorandum of Understanding signed by the Chief of our Bureau and State Forester Secrest. During the year 989 acres of white pine received initial protection.

In 1934, mainly through a $13,500 ERA allotment and CCC labor from CCC Camp Mohican, considerable was accomplished in giving initial protection to native and planted white pine in Ohio. To protect 1,500 acres of white pine 206,101 Ribes bushes were removed from 12,582 acres of land.

Organization

As pointed out, the first local control work done in the state was directed by A. E. Fivaz in the late summer of 1933. He continued with the work until O. J. Dowd was appointed State Leader. During the 1933-1934 winter, attention was given to pre-eradication surveys using CWA crews.

Early in the spring of 1934 a mobile crew of seven appointed men was formed, using ERA funds, to carry on local control around the most important

white pine plantations and white pine producing nurseries. Mr. Dowd also conducted control work using CCC labor within a working radius of Camp Vulcan.

Due to the nature of the 76A set-up, the white pine idea was not so desirable in 1935 and local control was conducted by local men, usually from the county in which control work was performed. The 1935 control program was conducted under an amendment to the original Memorandum of Understanding.

Table 110 shows the approximate number of men employed during each month and according to the program by which employed for 1935.

Authority for the Work

The Memorandum of Understanding referred to above sets up responsibilities on the part of the participating parties but the actual working of the Understanding is made possible through the functioning of the Ohio Plant Pest Law, - specifically under Section 1121 G. C. Section 1 to Section 1140-6 G. C. Section 28.

Plant Pest Law

The Plant Pest Law of Ohio empowers the Director of Agriculture to investigate outbreaks of dangerous insect or plant diseases within the state and to prescribe and enforce such preventative and remedial measures as he may deem necessary to the control or eradication of such outbreaks, and for such purposes shall have free access to any property or premises within the state. The Director is authorized to appoint deputy inspectors who shall carry out the instructions of the Chief of the Division of Plant Industry in the enforcement of the provisions of this Act. They are provided with appropriate insignia of authority. It is unlawful for any person in this state knowingly to permit any destructive or dangerously infestful insect or plant disease to exist in or on his premises. No damages are awarded the owner for the loss or destruction of infected trees, plants, shrubs or other plant material under this act as these are deemed to be a public nuisance. Any person violating any provisions of this Act or any rule or regulation of the Director of Agriculture promulgated under this Act shall be guilty of a misdemeanor and on conviction thereof shall be fined not exceeding the sum of one thousand dollars or imprisoned in the county jail for not more than ninety days, or both. The Probate Court of each county shall be the original and final jurisdiction in prosecutions under the provisions of this Act. Such court shall be opened at all times for such purposes-------. The Prosecuting Attorney of each county or the Attorney General shall conduct such prosecutions and all fines recovered shall be paid to the Secretary of Agriculture.

Blister Rust Regulation

A public hearing, for the consideration of promulgating a regulation to provide for a Ribes-free zone and to prohibit the reintroduction of Ribes into a Ribes-free zone surrounding any nursery growing white pine, was held on June 26 by the Ohio Department of Agriculture. Director Zaufelt declared that he had authority and the desire to prescribe blister rust control regulations to protect not only nurseries, but also the native pine forests and reforestation plantings with a minimum loss to the currant and gooseberry production of the State. He called for a new notice of hearing which would legally provide for the establishment of an all inclusive blister rust control

Table 118. - Approximate Number of Men Employed on Blister Rust Control Activities in Ohio, 1938.

Program	Position	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Approx. No. Man Months
Regular	State Leader							1	1	1	1	1	1	6
	State Leader	1	1	1	1	1	1							6
ERA	Foreman	1	1	1	2	2	2							12
	Laborer				1	2	2							5
	Sub-total	2	2	3	4	5	12							23
FERA	Laborers		1				56							57
State	Laborers						20	1	1	1	20	1		44
	Foreman									1	1			2
State-ECW	Laborers									26	10			36
	Sub-total									27	11			38
CCC	Laborers											10	10	20
	Nonrelief-Prof.								1	2	2	2		7
	Relief Skilled								3	3	3	3	1	15
WPA	* Intermediate									4	4	5		13
	* Unskilled							1	10	32	18	7		68
	Relief Sub-total							1	23	39	28	16	1	96
	Sub-total							1	24	41	31	19	1	117
	Appointed-State Leader	1	1	1	1	1	1	1	1	1	1	1	1	12
	* Foreman	1	1	2	2	2	2			1	1			12
All	Labor-Nonrelief-Prof.								1	2	2	2		7
Programs	* Skilled								3	3	3	3	1	15
	* Intermediate									4	4	5		13
	* Unskilled		1		1	3	56	1	11	59	49	55	15	216
	Total	2	3	4	4	6	60	2	15	70	59	64	17	295

regulation.

Another public hearing was held by the Department of Agriculture on September 27 for the purpose of promulgating a regulation to provide for the control of the white pine blister rust disease including the removal of or regulation of movement of five needled pines and currants and gooseberries.

Sixteen people were present at the hearing and the Department received 20-30 letters from nurserymen and white pine planters urging the adoption of regulatory measures to control the blister rust.

The proposed regulation was discussed openly in detail at the hearing and the following measure adopted.

* State of Ohio
DEPARTMENT OF AGRICULTURE
Earl E. Manefeld, Director
Columbus

Division Plant Industry
Walter J. Marion, Chief

REGULATION No. 9

*CONCERNING THE SUPPRESSION AND CONTROL OF THE WHITE PINE BLISTER RUST DISEASE.

*WHEREAS, a dangerous plant disease, injurious to white pine trees, known as the white pine blister rust (Cronartium ribicola Fischer) exists in the State, and

*WHEREAS, measures for the suppression and control of the disease are being applied within the State by the eradication of currant and gooseberry bushes, alternate hosts of the disease, and

*WHEREAS, native white pine areas, white pine plantings, and white pine nurseries should be protected from this disease;

*NOW THEREFORE, I, Earl N. Manefeld, Director of Agriculture for the State of Ohio, under and by virtue of the authority conferred upon me by the provisions of Section 1120 G. C., Sub-Section 7, to 3181 G. C., Sub-Section 11, of the Plant Pest Law, after a public hearing of which due notice was given affected parties, do hereby order and declare that in order to suppress and control the white pine blister rust in Ohio the following rules and regulations are established to wit:

*1. No five-needled pines shall be shipped or transported from one point to another within the State, unless a special white pine shipping permit shall have been issued therefore by the Director of Agriculture or his agents. Such permits may be issued on the following conditions:

*That the five-needled pines to be moved shall be grown from seed in a location within one mile of which there have existed since the time of planting such seed no European black currant plants, Ribes nigrum, and within at least 1,500 feet of which there have existed since the time of planting

said seed no currant or gooseberry (Ribes) plants of any size or variety which in the judgment of the Director of Agriculture would involve risk of spread of the white pine blister rust. A Ribes-free zone greater than 1,500 feet in width may be required when necessary in the judgment of the Director of Agriculture to insure freedom from infection. The requirement that the Ribes-free conditions described must have been maintained since the time of planting the seed may be waived pending the completion of Ribes eradication in the environs of the nursery, in the case of premises, which on account of their distances from known points of blister rust infection and the relative scarcity of susceptible Ribes in the vicinity of the five-needled pine stock, represent in the judgment of the Director of Agriculture little or no risk of being involved in blister rust infection.

"If the amount of five-needled pines produced in a nursery is so small that the owner is unwilling to cooperate in establishing and maintaining Ribes-free zones around his premises, the growing of these species shall be abandoned. Pine purchases for redistribution by nurserymen or dealers whose premises and surroundings are not Ribes-free shall not be held for sale on such premises during the season of the year when rust is spreading from Ribes to pine; namely, from June 30 to October 31, inclusive.

"2. The European black currant, Ribes nigrum L. or any variety of this species is hereby declared to be a public nuisance, and it shall be unlawful for any person to possess, transport, plant, propagate, sell, or offer for sale plants, roots, scions, seeds, or cuttings of these plants in this State, and the Director of Agriculture or his agents are hereby authorized to seize and destroy such plants, roots, scions, seeds, or cuttings.

"3. State Forests and State and Municipal Parks which, in the opinion of the Director of Agriculture, are now growing white pine in a sufficient quantity are hereby declared to be white pine growing areas and the growing of all currants and gooseberries is prohibited within 900 feet of these areas. The boundaries of the 900 foot zone about these areas shall be described and mapped, and copies of the same filed with Chief of the Division of Plant Industry.

"4. White pine blister rust control areas may be established for a distance of 900 feet from the bounds of native white pine areas or white pine plantings, or for a distance of 1,500 feet from white pine nursery plantings, which in the judgment of the Director of Agriculture have sufficient value to warrant such classification. All Ribes (currants and gooseberries) found growing in such a control area shall be considered as a potential menace to the white pine and shall be destroyed or removed. The replanting of currants or gooseberries in a blister rust control area is prohibited. The boundaries of the respective zones shall be mapped and described, and copies of the same filed with the Chief of the Division of Plant Industry.

"5. Any shipment of five-needled pines found to be moving or to have been moved within the State without the permit described in Paragraph 1 shall be subject to seizure, destruction, or such other disposition as shall be determined by the Director of Agriculture.

These regulations become effective October 15, 1936.

Walter J. Carlson
Chief, Division of Plant Industry

Earl H. Devendorf
Director of Agriculture"

Status of the Rust

Blister Rust infection was found in three additional Ohio counties in 1935. Infection on Ribes was noted in Trumbull and Portage but what is more important was the finding of infection (pycnial canker) in the Hoosier Arboretum on white pine. This may indicate that infection there is rather extensive.

In Table 118 there is tabulated the present Ohio infection status.

Augmenting the information given in the above table, Table 120 shows the host and location where infection has been found during the years that scouting for the rust has been made.

Distribution of White Pine in Ohio

White pine originally was native throughout Northeastern Ohio and it is still found there in scattered lots. Today there are four major areas of native pine in the state in addition to the many scattered planted stands. The natural pine areas are: The Little Mountain Area of Lake and Geauga Counties, The Little Beaver River stands, The Scioto River stands of 1200 acres and the Vermilion River area. These stands are usually scattered along stream banks and have escaped heavy fires and clearings for farms. It is now interesting to note that white pine is rapidly reclaiming old fields and is especially receeding in forested areas where chestnut is being eliminated by blight. With great strides being made to control blister rust it seems evident that a great future is in store for white pine in reclaiming old fields where seed trees are near and on the likely area for general reforestation purposes.

The 1934 pre-eradication survey shows that there are approximately 8,200 acres of native pine in the state, 5,400 of which have been protected. The remainder, presumably, is very scattered and will not be protected at least until further regeneration brings the pine population per acre to a point where it is considered worth the cost of bearing protection.

The number of white pine planted annually is gradually increasing from year to year. This is shown graphically in Table 121.

Pre-eradication Surveys

Pre-eradication surveys were made of all native pine stands during the spring of 1934 and the more important plantations were also mapped. Further plantation surveys were made in the fall of 1935. The leads for these, of course, were secured from State Forester Secrest's planting records.

Extensive surveys were also made in the fall and winter of 1935 in locating Cultivated European Black Currant bushes. These tabulations are made and eradication work is to be done in the spring of the coming year. The results of the CBC surveys are shown later in this report in connection with CBC eradication.

Local Control

Local control during 1936 in Ohio was performed by State CCC, Fire,

Table 119. - Showing Status of Present Infection in Ohio Counties, Classified According to Year of Infection First Noted.

Year 1st Found on Ribes	County	Ribes Infection Only	Ribes and Pine Infection with Date of P. Infection Discovery 1910	1911	1921	1924	1925	Total # of Counties
	Summit*		I					
	Lake*		I					
	Mahoning*			I				
	Columbiana*			I				I
1921	Ashtabula	I						
	Fulton	I						
	Geauga					I		I
1924	Cuyahoga						I	I
1925	Wayne						I	
	Trumbull	I						
	Portage	I						I
Total		4	2	2		1	2	1

*Infection found on imported nursery stock and destroyed.

Table 120. - List of Ribes Host Locations Found or Originating in Ohio, 1910 to 1936.

Location	County	Host infected	Year found	Remarks
R. Hess Nursery, Akron	Summit	White Pines	1910	Pines imported from Chalmsey, France.
Storrs & Harrison Nursery, Painesville	Lake	do	1910 1911 1916	10,000 pines imported from Orleans, France, in 1909. Infected pine in 1916 was from same lot as those found infected in 1910 and 1911. No Ribes infection seen. Remainder of pine lot destroyed Dec. 1915.
J. Jenkins Nursery	Columbiana	do	1911	Diseased pines shipped from Jenkins nursery in 1911 to I. Hicks & Son, L.I., N.Y. Infection discovered at destination.
Nursery near Cuyahoga Falls	Summit	Two small white pines	1917	1,000 white pines imported from a Minnesota nursery in 1915. All remaining white pine (668) of this lot were destroyed in 1917. No Ribes infection found.
One mile west of Williamsfield along road	Ashtabula	1 R. Cynosbati heavily infected	8/5/31	Found by Sheals and Pierce uredinial stage. Many other R. Cynosbati examined. No infection.
Mr. Kelly Monroe Center	do	R. nigrum one bush	8/5/31	These two places found by Sheals and Pierce are about 1/4 mile apart. Many R. Cynosbati examined. None found infected.
J. C. Anderson Monroe Center	do	R. nigrum several bushes	8/5/31	
Two miles east of Fayette	Fulton	R. Cynosbati one bush	8/6/31	Found by Sheals and Pierce. Numerous R. Cynosbati examined. One found infected.
Four miles west of Harts Grove. Three miles East of Montville.	Geauga	R. nigrum	8/28/31	Found by Sheals.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Geo. Swayne, Jefferson	do	R. nigrum	1934	Heavy infection.
Geo. Simpson, Jefferson	do	do	1934	Heavy infection.
A. C. Courtenay, Kellogsville	do	do	1934	Heavy infection.
H. N. Lennert, Mentor	Lake	4 do	1934	Heavy infection.
R. R. Hanna, Waite Hill	do	10 do	1934	Heavy infection.
Arthur McCabe, Little Mountain	do	18 do	1934	Medium infection.
Geo. Kuntz Farm, Chardon	do	75 do	1934	Heavy infection.
Circle F Farms, Gates Mill	Geauga	25 do	1934	Heavy infection.
A. Sisden, Gates Mill	do	10 do	1934	Heavy infection.
Berkshire Farms, Little Mountain	do	16 do	1934	Heavy infection.
Mather Estate, Little Mountain	do	18 do	1934	Heavy infection.
Peter Peterson, Jr. Chesterland	do	10 do	1934	Heavy infection.
S. P. Dallnen, Chagrin Falls	do	48 do	1934	Medium infection.
M. S. Burke Estate. Chagrin Falls	do	32 do	1934	Bushes Pulled, heavy infection.
Chas. Gensle, Novelty	Cuyahoga	Bushes to be pulled	1934	Heavy infection.
Herrick Estate, Chagrin Falls	do	do	1934	Heavy infection.
Ingalls Estate, Chagrin Falls	do	10 R. nigrum	1934	Heavy infection.
Wick Estate, N. Orange		do	1934	Slight infection.

Table 130. - List of Blister Rust Locations found or originating in Ohio, 1910 to 1935.(Continued)

Location	County	Host infected	Year found	Remarks
Lawrence, Perry	Lake	R. nigrum	1935	Light infection.
Jensen, Perry	Lake	do	do	do
Ware, Austinburg	Ashtabula	do	do	Heavy infection.
Martin, Austinburg	Ashtabula	do	do	do
Stone, Jefferson	Ashtabula	do	do	do
Spaulding, Munson	Geauga	do	do	do
Roberts, Munson	Geauga	do	do	do
Wills, Chester	Geauga	do	do	Light infection.
DeGabe, Mentor	Lake	do	do	Very heavy infection.
Dellner, Russell	Geauga	do	do	Heavy infection.
420 Hull St., Chagrin Falls	Cuyahoga	do	do	do
Rice, Johnson	Trumbull	do	do	do
Holt, Colebrook	Ashtabula	R. sylvestre	do	do
Dodge, Colebrook	Ashtabula	R. sylvestre	do	do
Hicks, Orange	Cuyahoga	R. nigrum	do	do
Hallbrook, Troy	Geauga	do	do	do
Sargent, Chagrin Falls	Cuyahoga	do	do	do
Schiner, Bainbridge	Geauga	do	do	do
Root, Palmyra	Portage	do	do	do
Kimbel, Palmyra	Portage	do	do	do
Satan, Northfield	Summit	do	do	do
Olszewski, Painesville	Lake	do	do	
Tomanicka, Painesville	Lake	do	do	
Thayer, Mentor	Lake	do	do	
Hilliard, Mentor	Lake	do	do	
Mackey, Mentor	Lake	do	do	
Colby, Willoughby	Lake	do	do	
Stage, Munson	Geauga	do	do	
Green, Newberry	Geauga	do	do	
Bishop, Russell	Geauga	do	do	
Sudell, Russell	Geauga	do	do	
Filter, Russell	Geauga	do	do	
Chase, Russell	Geauga	do	do	
[illegible], [illegible]	[illegible]	do	do	
[illegible], [illegible]	[illegible]	do	do	
Fullenkopf, Russell	Geauga	do	do	
Gillis, Russell	Geauga	do	do	
Feigle, Russell	Geauga	do	do	
Mechlich, Bainbridge	Geauga	do	do	
Cole, Bainbridge	Geauga	do	do	
Denfield, Bainbridge	Geauga	do	do	
Miner, Bainbridge	Geauga	do	do	
Hiss, Bainbridge	Geauga	do	do	
Sheffield, Bainbridge	Geauga	do	do	
Nelson, Bainbridge	Geauga	do	do	
Chilson, Bainbridge	Geauga	do	do	
Chilson, Bainbridge	Geauga	do	do	
Johnson, Orange	Cuyahoga	do	do	
Lash, Solon	Cuyahoga	do	do	
Kilms, Solon	Cuyahoga	do	do	
Waters, Chagrin Falls	Cuyahoga	do	do	
Pepper, Chagrin Falls	Cuyahoga	do	do	
Profsot, Ravenna	Portage	do	do	
Matthews, Streetsboro	Portage	do	do	
Hook, Shalersville	Portage	do	do	
Sargent, Shalersville	Portage	do	do	
Pitman, Ravenna	Portage	do	do	

Table XXI. - Number of White Pine Planted in Ohio as Reforestation Projects, 1908-1935.

Year	Number Plantings	Number trees planted	Year	Number Plantings	Number trees planted
1908	1	2,000	1932	50	91,800
1909	2	3,418	1933	1	717
1910	5	2,800	1934	5	1,800
1911	4	4,300	1935	2	4,600
1912	5	2,125	1936	139	90,860
1913	5	2,450	1937	207	115,000
1914	10	16,060	1938	50	55,040
1915	11	14,750	1939	156	141,865
1916	6	9,431	1940	73	67,750
1917	17	47,016	1941	73	104,207
1918	19	54,755	1942	70	132,502
1919	14	10,625	1943	175	894,875
1920	25	52,000	1944	47	282,775
1921	9	2,606	1945	135	544,875
Total 1908-1921			Total 1922-1945		
Ohio Total 18		230,161	Ohio Total	1,[illegible]	[illegible]
Grand Total			26 years	1,[illegible]	[illegible]

FERA, Ohio, relief, federal WPA and private cooperation.

Blister rust control work at Little Mountain in Lake County was operated as a FERA project (48-217-26) during June 1935. The labor was furnished by FERA, while supervision was supplied by temporary agents (Peabody and Fraser) employed on Ohio funds. The project was approved for 1224 man-hours FERA labor, but was completed by 1182 hours FERA labor and 900 hours OEA supervision. Transportation was furnished by the laborers and WPA. Eight hours were worked per day. A summary of the work is shown in Table III. Satisfactory work was performed on the Little Mountain area and about adjacent plantings. A total of 24 Ribes nigrum was removed from infecting distance of these pine. All of these black currants were heavily infected in 1934. This area is composed of large estates privately owned as country homes of prominent Cleveland people. They have planted considerable white pine (25,000 trees) adjacent to the native pines in order to reforest and to beautify their estates.

Local control work was performed by the Ohio agency at the Akron Parks Works pine planting in Portage County in addition to furnishing supervision for work at these other projects where labor was furnished by other agencies.

Local control work was carried on at Camp Robinson and Camp Furnace Run by State CCW labor.

Camp Robinson - This camp had been abandoned from December, 1934 to July, 1935 so no eradication work was performed earlier in the year. Dr. Lawrence Daniels managed the work under the supervision of Camp Superintendent, James C. Miller.

A group of 24 CCC World War veteran enrollees was divided into four areas. One man in each area was appointed area leader and made responsible for all work performed by that area. Eradication was started on a steep and rocky slope to test the enrollees physical ability to climb hills and get themselves through the brush and briers. Those that were physically unfit were transferred to other projects and replacements were made. The crews worked the steep slopes with a "staggered" line to avoid injuries from falling rocks. All eradication was performed on State owned land.

Camp Furnace Run - The Furnace Run CCC Camp in Summit County furnished ten enrollees (60 days labor) for protecting County native and planted pine areas. The work performed was credited to WPA as WPA labor and supervision (Zeisenroot) were supplemented by this camp labor which was quite inefficient and indifferent to the work. It was necessary to cross work all areas with this labor.

The Cuyahoga County Home Relief Camp at Brecksville (Cuyahoga County) furnished 22 men (117 man-days) to assist with Ribes eradication at the Brecksville native white pine area near the camp. This labor was inefficient, so the area was cross stripped to check their work. The work performed was credited to the WPA program inasmuch as WPA labor and supervision were responsible for the work. Zeisenroot had charge of this job.

The largest portion of local control in Ohio during 1935 was performed by the WPA agency with relief labor and non-relief supervision. The first eradication work was performed July 23 in Ashland County. In several counties where the white pine blister rust control work was the first WPA project to be started the relief laborers expressed their personal gratitude for an opport-

ity to work for a living in place of living on grocery orders furnished by the relief agency.

Requisitions for labor were approved by the County WPA at first and later by the District WPA. These were filled by the County National Reemployment Service. The labor that has been supplied has been similar to that which would normally be employed for work of this kind.

The Boy Scouts furnished 15.5 man-days labor for local control at their estate, while the Akron Water Works furnished two man-days labor for work at their plantings.

In Table 123 local control for the years 1933, 1934 and 1935 is tabulated.

Checking

The local control eradication work was checked up determine the thoroughness of the eradication. It is generally understood that absolute eradication would be too costly and if not more than 25 feet of live stem of Ribes are left per acre (six bushes on a space 50 x 50 feet) the work is considered satisfactory. The results of the checking are shown in Table 124.

Nursery Sanitation

Nursery sanitation consists of the work involved in the establishment and maintenance of Ribes free zones around white pine producing nurseries. The work is conducted in cooperation with the State Nursery Inspection Service and the nurserymen.

Nursery sanitation work was started in Lake County during the early part of 1933 in order to prevent infection of white pine nursery stock which is being shipped to all parts of the state.

Northeastern Ohio is known as the nursery center of the United States because of the large number of nurseries in that area. It was clearly evident that infested white pine nursery stock might be shipped to other parts of Ohio where the pine was actually protected from blister rust infection by the eradication of susceptible host plants within infective distance. Blister rust infection was found generally distributed through Ashtabula, Lake, and Geauga Counties in 1934.

Ten nurseries in this area were contacted regarding nursery sanitation to protect their white pine stock from infection. Excellent cooperation in furnishing labor for eradication and compensation for cultivated Ribes removed were received from five nurseries. The other five nurseries that had small amounts of white pine decided to stop growing it.

Four other nurseries that cooperated in 1934 also carried on cooperative nursery sanitation in 1935.

A report of the nursery sanitation work performed during 1935 is shown in Table 125. It will be noted that nursery sanitation work was performed at nine nurseries that are growing 3,051,301 white pine seedlings. European black currants (C.nigrum) were eradicated at 47 locations within infective distance from the nursery areas. It will be noted that nursery sanitation work

Table 146. - Summary local control, Ohio, 1[illegible].

Agency Servicing Labor	Acres N. F.	Acres Worked Crew	Acres Worked Scout	Acres Worked Total	Hives Pulled Crew	Hives Pulled Scout	Hives Pulled Total	Man-Days Labor	Man-Days Super.	Man-Days Total	Costs Labor	Costs Supplies and Supers.	Costs Transport.	[illegible]
Lewis MCF	345	1072	1158	2230	3360[a]	6557	9916	998[b]	40.[illegible]	1042.5	1485.50[c]	249.34	13.58	[illegible]
FSA	158	845		845	[illegible]	[illegible]	[illegible]	136		136	868.00			[illegible]
FSA		19		19	185		185	4	31.5	35.5		334.25		[illegible]
RPA	325	1997.5	1496	3493.5	21[illegible]	4513[d]	6[illegible][e]	1389.5	93	1419.5	2942.07	325.40	158.21	[illegible]
Trans. Point								117	4	121	188.15			[illegible]
Tiple and Triple	2.5	165	257	590	3110	19	3129	17.5	0	17.5	40.44			[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[a] Includes 94 Hives Pigeon.
[b] Includes 663 Hives Pigeon.
[c] Supervision furnished by RPA
[d] Supervision furnished by MCF-C.
[e] Includes $134.58 and 30.5 man-days MCF-C.
[f] Includes $475.41 and 88 man-days MCF-C.
[g] Includes 88 man-days furnished by OCC Camp.
[h] Includes $80.00 furnished by OCC Camp.
[i] Includes 537 Hives Pigeon.

Table 146. - Local Control, Ohio, 1939 to 1965, inc.

Year	Acres N.F. Protected	Acres Worked Crew	Acres Worked Scout	Acres Worked Total	Hives Pulled Crew	Hives Pulled Scout	Hives Pulled Total	Total Cost	Per Acre Cost	Per Acre Hives	Per Acre Cost Per [illegible]
1939	959	9,194	490	9,684	91,305	0	91,305	$7,233.40	2.99	9.5	0.16
1954	1,246	5,630	8,377	14,062	191,185	15,079	206,103	8,904.71	.63	16.6	[illegible]
1[illegible]	945.7	4,044.7	5,474	7,567.[illegible]	3[illegible]	8,954	[illegible]	5,170.91	.38	31.7	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 1[illegible]. - Results of Checking Local Control Work, Ohio, 1950

Job Number	Acres Worked	Trees Felled	Acres Checked	Trees Found	T.L.S. Found	Average per Acre Trees	Average per Acre T.L.S.
1-4	180	584	2	4	1.2	2.0	1.7
1-10	177	3,111	1	17	19.5	8.5	1.7
1-25	147	2,130	3	6	7.0	2.0	2.3
1-13	568	8,998	1	7	10.0	3.5	1.0
2-5	443	7,658	2	10	25.0	5.0	12.5
19-1	169	67,143	10	101	90.5	10.0	9.0
19-60	147	6,436	3	6	9.0	2.0	3.0
20-1	480	61,941	10	152	185.0	15.2	18.5
24-8	270	18,511	29	146	309.5	5.0	29.5
11-8,1,9,18	5,451	88,145	45.5	341	569.5	5.2	8.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table [illegible] - [illegible] Eradication, Ohio, 1936.

[illegible]	Ownership	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Man-Days Labor Private	Man-Days Labor Fed.	Man-Days Super. Fed.	Man-Days Total	Costs Labor Private	Costs Labor Fed.	Costs Super. Fed.	Costs Ribes Compensation	Costs Other Exp.	Costs Total
[illegible]	Private	1st	2	41,000	264	660	[illegible]	770	6.7	6.4	6	19	$5.40	$15.14	$26.09	$16.00	$12.00	[illegible]
[illegible]	Private	2nd	[illegible]	41,000	38	13		35	1		5	6	1.00		25.11	15.00	10.16	[illegible]
[illegible]	Private	1st	52		170	112		890			4				4	5.00	3	[illegible]
[illegible]	Private	1st	50	59,733	12	600		390		10	8	18		5.91	31.58		11.31	[illegible]
Trumbull	Private	1st	51	456	481	1,362	[illegible]	2,040	11.5	1.5	5	15	25.50	12.17	18.60	11.00	41.08	[illegible]
[illegible]	Private	2nd	16	350	360	4,270	[illegible]	4,566	6.5	28	8.5	40	1.00	195.55	75.88	44.50	151.09	[illegible]
[illegible]	Private	1st	50	5,170	632	1,107	[illegible]	7,282	44.5	21.2	15	77	17.10	117.58	[illegible]	105.00	180.00	[illegible]
[illegible]	Private	1st	25	1,200	1,366	10,134	[illegible]	11,208	80	22.5	17.9	117	108.70	164.28	140.41	125.00	202.18	[illegible]
[illegible] State	State	3rd	20	1,000,000	f	f		1			2	2			15.06	.20	5.00	[illegible]
[illegible]	State	3rd	22	6,500	290	770	[illegible]	1,093		17	8	25		68.50	34.50	108.00		[illegible]
[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Work performed by Federal Nursery Inspector. His time and costs are not included.

[illegible] Includes two man-days contributed by State for work performed by State Nursery Inspector.

[illegible] Includes $35.00 salary contributed by State for work performed by State Nursery Inspector.

[illegible] Includes $5.50 expenses contributed by State for work performed by State Nursery Inspector.

[illegible] Ribes Compensation paid by the Cooperator except the last two items which were paid by the State.

f Ribes-free area. No coverage needed.

port $1.00 per acre worked. No cellar labor was used.

A tabular summary of all nursery inspection work to date (1932, 1934, and 1935) is shown in Table 128.

It is expected that nursery eradication will be extended to other white pine nurseries in Ohio during 1936 in order to prevent dissemination of infected white pine nursery stock.

Cultivated Black Currant Eradication

The eradication of cultivated European black currants (Ribes nigrum) is generally recognized as an important general Ribes rust control measure. The black currant is chiefly responsible for the long-distance spread and local establishment of the blister rust disease.

A systematic survey to locate these bushes was started in February 1935 and developed into an important part of the year's work. Eradication work followed the survey. The methods of locating and eradicating cultivated currants were developed and improved throughout the year to meet the various problems in connection with such a program. These methods were organized into a 16 page mimeographed manual of instructions on cultivated black currant eradication in Ohio.

During the fall of 1935 it was found that European black currants were generally infected with blister rust in Ashtabula, Lake, Geauga, and Cuyahoga Counties while other Ribes were not infected. These infected black currants were found within infective distance of white pine plantings and nurseries in many cases. (D. B. Stone Jr. Estate, Garrick Estate, Burke Estate, Wick Estate, Mackie Farm, Stockbridge Estate, Orlo Estate, Lather Estate and others). People who owned infected black currants were notified and some of the infected bushes were immediately removed. Informing a current grower that his black currants were infected brought immediate response in such the same manner as informing a man that his house is on fire. Immediate action was taken in several instances.

Excellent public cooperation has been received from black current growers during 1935 as shown in Table 127. It will be noted therein that data on cooperation are tabulated for 354 of the 425 locations which were eradicated during the year. These 354 locations, located in 21 townships, are representative of the excellent cooperation that has been received. The remaining 121 locations are scattered throughout 17 additional townships and were not included for lack of time in preparing this report. The data presented in Table 127 show that 91.8% of the private property owners cooperated in black currant eradication either by verbal or written consent or by digging the bushes themselves. No report on cooperation was obtained at 2.1% of the locations because these locations were abandoned and the owner could not be located.

These abandoned places were principally locations of black currants planted around summer cottages on Lake Erie in Willoughby and Mentor Townships. Protests against removal were encountered at one (0.3%) of the 354 locations. However, satisfactory arrangements were made and the bushes were removed.

It will be noted in Table 127 that there was an average of 7.7 bushes per location. No compensation was paid for bushes that were removed, but an allowance was made in the report of cooperative expenditures as a private con-

Table 1 - Nursery Survey Application, Ohio, 1962 - 1964, Inc.

Nursery	Ownership	Acreage	Length of Time Open	Amount of Office Time in Field	Number Visits	Average Minutes	Will Return	Will Recommend	No. of Calls	Sales Volume	Non-Stage Sales: Priv.	Non-Stage Sales: Other Prod.	Non-Stage Sales: Total	Non-Stage Expenditures: Ads	Non-Stage Expenditures: Prod.	Non-Stage Expenditures: Total	Cash Sales: Private	Cash Sales: Other Prod.	Cash Sales: Total	Cash Conversion: Amount	Cash Conversion: Percent	Cash Conversion: Dollars	Cash Value: Amount	Cash Value: Percent	Cash Value: Dollars
Rikkelle	Private	Lay	07	17,700	517	555	[illegible]	[illegible]	4	750	8.5	8.5	100	5	11,[illegible]	15	$ 1.50	$18.64	100	$ 66.75	71.[illegible]	$ 20.00	$48.24	72%	$12,[illegible]
Schreeder	Private	12	27	50,500	875	12			175	400	6			13	Priv.,[illegible]	16	15.00			17.36	Priv.,[illegible]	50.00	1.50	[illegible]	[illegible]
Schlender	Private	3.5	90	50,500	78	17			14	51	1			4	100	5	1.00			21.10	42%	25.00	10.15	75%	[illegible]
Fourier	Private	[illegible]	35	56,500	475	1,[illegible]			300	1,10[illegible]	1	-		2.5	25%	2.5	27.50			36.32	80%	40.00	30.47	80%	[illegible]
Jenkins	Private	50	55	55,050	175	500			110	400				10	100	10				12.15	75%	25.00	37.24	75%	[illegible]
Jenkins	Private	100	30	11,000	475	325			10	350												5.00			[illegible]
Jenkins	Private	400	50	57,500	10	500				550		10	50%	1	100	15		75.00	75%	21.25	75%		15.00	75%	157.50
Donnell	Private	101	55	700	501	1,004	[illegible]		75	1,065	11.5	3.5	75%	3	75%	15	20.00	16.25	50%	16.00	80%	21.30	32.00	50%	75.15
Gale	Private	101	3.5	150	350	3,150	[illegible]		35	3,250	4.5	10	50%	4.5	50%	35	4.00	115.25	50%	10.25	50%	44.00	100.25	75%	[illegible]
Akers, Partner	Private	101	4	2,000	280	7,000	[illegible]		114	1,280				5	100	5				21.15	80%	50.00	12.50	50%	170.15
Kelley	Private	101	50	2,100	420	5,027	[illegible]		407	5,052	42.0	21.0	75%	15	75%	75	17.00	177.05	75%	84.05	75%	140.40	200.08	75%	[illegible]
Cole	Private	101	37	1,500	1,005	10,104	[illegible]		1,004	11,305	37	38.0	75%	17.5	50%	115	10.50	190.50	50%	148.11	80%	154.00	351.47	50%	1,117.[illegible]
Marietta State	State	100	45	1,000,075	800	104				194		5	100%			0		95.00	75%						[illegible]
Marietta State	State	300	20	1,000,075	750	1				2				.5	100%	.5				5.40	80%		12.50	50%	[illegible]
Marietta State	State	300	30	1,000,075					4	5				4	100%	4				18.00	75%	.50	7.00	75%	[illegible]
Sander Schroeder	State	147	30	5,500	410	5,005			3	5,105		50	50%	15.5	75%	65.5		150.00	50%	15.40	50%		75.14	50%	[illegible]
Sander Schroeder	State	300	30	5,500	250	500	[illegible]		056	1,085		15	75%	6	75%	21		78.00	75%	24.75	80%	105.00			[illegible]

* Job Incentive.

Table 187. — Public Cooperation in Elect Current Irrigation, Ohio, 1938.

Township	Total Irrigated Locations	Total Acres	Type of Public Cooperation: Signed Delegate	Verbal Consent	Owner Sig. Card	Owner Pro-Ferr	No Report	Total
02 Willoughby	77	760	64	2	4		10	77
03 Kirtland	15	155	15		1		2	18
20 Mentor	68	680	60	2	2		14	78
30 Painesville	53	310	50	55	1	1	2	53
40 Thorsis Falls	111	730	106	2	1		2	111
40 Solon	38	313	33	1			2	36
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Percentage			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Cooperative	[illegible]
Systematic	[illegible]
No Report	[illegible]
Uncontrolled pickup, etc.	
Total	100.0%

bution to blister rust control work for bushes that were removed. Experience shows that good newspaper publicity is helpful in securing cooperation, but direct personal contacts to explain carefully the nature of the disease and how it spreads were more effective. In many instances follow-up calls were necessary.

Table 125 summarizes the CCC eradication program in Ohio during 1936.

Cultivated black currants usually grow in gardens, door yards, or orchards near farm or village homes. Checking these areas after survey and eradication work has been performed is subject to public criticism as a duplication of effort, but it is absolutely necessary in order to maintain high efficiency. While most of the territory covered has been checked by foremen very little organized data on the number of places checked, number of infections, and bushes found have been kept. Checking has demonstrated that survey crews cannot be too careful in the search for cultivated black currant bushes.

No checks were made on the N.Y.A. black currant survey. In Lake County the N.P.A. found two locations that were missed by the N.Y.A. crews that surveyed the mile zone around the nurseries.

A number of areas will be rechecked during 1936 to determine the degree of efficiency in black currant eradication.

The Lake and Geauga County PWA offices approved cultivated black currant survey projects in June, but approval was not received from the State PWA at that time.

In August, State WPA project proposals for a black currant survey were prepared for each of the twenty-four counties in northeastern Ohio. Several of these were submitted to the County and District WPA offices.

In September, twenty-nine county WPA project proposals were consolidated into one State WPA project proposal and submitted directly to the State WPA office in Columbus. Dr. Edward Secrest, State Forester, sponsored all project proposals. Additional information regarding the work was supplied from time to time and the project was approved by the State WPA office in October. The proposal was disapproved as a "Black Current Survey" by the Washington Coordinating Committee of the Works Progress Administration in November.

It was revised to include survey and eradication of the black currant, and resubmitted December 7, 1935. The Coordinating Committee of the Central Statistical Board and the Works Progress Administration approved the project on Dec. 12, 1935.

Thirteen college students from Wooster, Kent State, and Ursa College, employed on N.Y.A. funds, assisted with the European black currant survey in Wooster, Kent, Ravenna, Akron, and Zanesville, Ohio during November and December. Local supervision of their work was furnished by the Biology Department of each college.

The black currant survey work at each of these colleges was approved by William F. Guthrie, State Supervisor, Student Aid Program, National Youth Administration in Ohio.

Table 120 - Cultivated Plant Pest Eradication, Ohio, 1985.

County	Number Inspections	Found Loc.	Found Bushes	Destroyed Loc.	Destroyed Bushes	No. Ind. Locations	Bushes Non-Dens 20%	40%	75%	Total	Cost 20%	40%	75%	Total
Ashtabula	500	11	200	5	194	6		38		38		$ 92.47		$ 92.47
Lake[d]	12,450	649	4,547	139	2,996	8	51.5	205.5		257	$289.00	758.14		1,047.14
Geauga	6,900	114	1,645	68	472	32		95		95		150.07		150.07
Cuyahoga[a]	9,650	191	2,048	158	1,339	7		104		104		367.09		367.09
Morrow	80	1	1						8	8			$ 6.80	6.80
Marion	80	17	62	1	6[f]				54.5	54.5			59.85	59.85
Sandusky	200	4	35	3	9	1								
Perkins	3,900	99	985	40	810	8		50	45	104		258.80	107.35	366.15
Tuscarawas[b]	950	5	10			1								
Columbiana[b]	80	2	16											
Miami[b]	150	3	9											
Mahoning[b]	180	3	10											
Scioto[b]		1	2											
Total	35,500	1,[illegible]	8,[illegible]	1,[illegible]	5,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

a Reported by State Nursery Inspection Service.

b Reported by State Leader in Regular Funds.

c Included in 99% local control report.

d Includes 94 E. Nigrum eradicated by PPQ and reported under local control and 595 E. Nigrum eradicated by ODA and reported in Nursery Eradication.

e Includes 283 E. Nigrum eradicated by ODA and reported under local control.

f Ribes Nigrum eradicated by ODA and reported in Nursery Eradication.

Informational Activities

Several hundred people were contacted and informed regarding white pine blister rust control as the pre-eradication survey of white pine plantings were made.

Letters were sent to 68 white pine owners asking for their cooperation in white pine blister rust control work during 1960. Forty-three percent (31%) of those that replied stated that they would provide labor for the work.

The State Forester mailed 120 letters to white pine planters, calling their attention to the white pine blister rust menace and suggesting that they attend the public hearing on blister rust control regulations at Columbus, September 27, 1960.

A few newspaper articles on white pine blister rust control and live oak wilt eradication were released to 3,000 newspapers, 700 Grange lecturers, and 250 County Agricultural Agents and Vocational Agricultural Instructors through the Ohio Agricultural Experiment Station Weekly Press Bulletin.

Blister rust bulletins were used as part of the publicity in Hamptonbloom current eradication.

A blister rust school for State Nursery Inspectors was held May 24 at Chester, Ohio. Arrangements for this school were made by Dr. G. T. Ellenwood, Chief Nursery Inspector. Dr. J. C. Tewes, Chief of Botany and Plant Pathology at the Department Station, explained how blister rust spreads and how it may be identified.

A field trip was made to the infection area at Chagrin Falls.

Costs

A summary of the fiscal records shows that the blister rust control program was supported by eight participating agencies.

In Table 1[illegible] the 1957 Ohio costs are shown by agency cooperating, by the control program, by salary and expense and by the phase of the control program.

Table 1[illegible] shows that the costs had averaged 4[illegible] percent with relation to the total expenditure for each agency. Table 1[illegible] shows the same comparations but averaged [illegible] percent with relation to the total of the expenditures given to each phase of the control program by each participating agency.

Conclusion

Practically all important stands of white pine in the state have received initial protection. Of course, the State is doing considerable white pine planting and there is a constant acreage increase. This is exclusive of the wide spread reforestation in old cornfield stands where white pine seedlings are used.

During the year there was a noticeable increase in the amount of

Table [illegible] - Expenditures for all Plaster Rock-related Projects in the Region for Calendar Year 1965

Agency	Expenditure Classification	Transportation	C.N.R. Agent	Other Interviews	Temporary Residents	C.N.R. Residents	Subsidiary	Temporary Lodging Expense	Other Field Costs	Equipment & Misc.	[illegible]
Town of Perth	Salaries	[illegible]	-	[illegible]	[illegible]	-		-	[illegible]	-	[illegible]
	Expenses	[illegible]	-	-	[illegible]	[illegible]	[illegible]	-	-	-	[illegible]
	[illegible]			[illegible]							
Town, Relief	Salaries	-	-	[illegible]		-		-	-	-	[illegible]
	Expenses	-	-	-	-	-		-	-	-	
	[illegible]			[illegible]							
Town F.R.D.A.	Salaries	-	-	[illegible]		-		-	-	-	
	Expenses	-	-	-	-	-		-	-	-	
	[illegible]										
Town R.T.A.	Salaries	-	-	-	-	[illegible]		-	-	-	[illegible]
	Expenses	-	-	-	-	-		-	-	-	
	[illegible]										
Town S.C.A.	Salaries	-	-	[illegible]	-	-		-	-		[illegible]
	Expenses	-	-	[illegible]	-	-		-	-	-	[illegible]
	[illegible]										
Consult	Salaries	[illegible]	-	-		-		-	-	-	[illegible]
	Expenses	[illegible]	-					-	-	-	
	[illegible]										
T.T.P.A.	Salaries	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	-	-	[illegible]
	Expenses	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	-	[illegible]	[illegible]
	[illegible]										
Federal R.P.I.	Salaries	-	[illegible]	[illegible]	-	[illegible]		-	-	-	[illegible]
	Expenses	-	[illegible]	[illegible]		[illegible]					[illegible]
	[illegible]										

[illegible]

(1) [illegible]
(2) [illegible]
(3) [illegible]
(4) [illegible]

[illegible]

Table 1A1. - Percent of Each Agency Expenditure Spent on Each Project, Date, 1986.

Agency	Supervision	S.R.C. Admin Activities	Pilot Evaluation	Survey Verification	U.S.C. Evaluation	Pre-event Survey	Overhead	Other Field Equipment Data	& Misc.	Tots.
State	89.2		1.4	27.2	18.5			1.2		100
Trans. Relief			100.0							100
Sieve-ma			100.0							100
State FTA					100.0					100
State ESF			100.0							100
Regular	100.0									100
SSA	85.8	4.4	1.4	38.4	2.7	4.7			7.6	100
Pet. Pl		8.0	50.7		26.7					100
[illegible]		[illegible]	[illegible]							[illegible]

Table 151. - Percent of Each Project Expenditure Spent by Each Agency, Ohio, 1935.

Agency	Supervision	S.E.C. Agent Activities	Ribbon Production	Nursery Sanitation	O.S.C. Distribution	Preserved. Survey	Checking	Other Field Data	Equipment & Misc.	Total
State	53.2		0.6	39.1	14.7			100		16.2
Trans. Relief			1.6							0.7
State FERA			7.8							1.1
State RTA					4.2					0.7
State NYA			85.8							9.1
Regular	27.7									1.7
WPA	29.6	56.6	4.2	60.9	16.6	100			100	44.1
Tot. WPA		43.4	61.8		65.4					25.1
Total	100	100	100	100	100	100	100	100	100	100

[illegible] especially on CCC leaders. The state has taken details [illegible] law the [illegible] and at the close of the year a very large CCC [illegible] program was getting under full swing in the northeastern [illegible] of the state.

Exceptionally fine cooperation has been reported from the field in the state of Ohio. As indicated, the main phase of the control program during the year was the elimination of CCC camps from the Napoleon area. The [illegible] of the state and property owners have cooperated very favorably in relocating their homes.